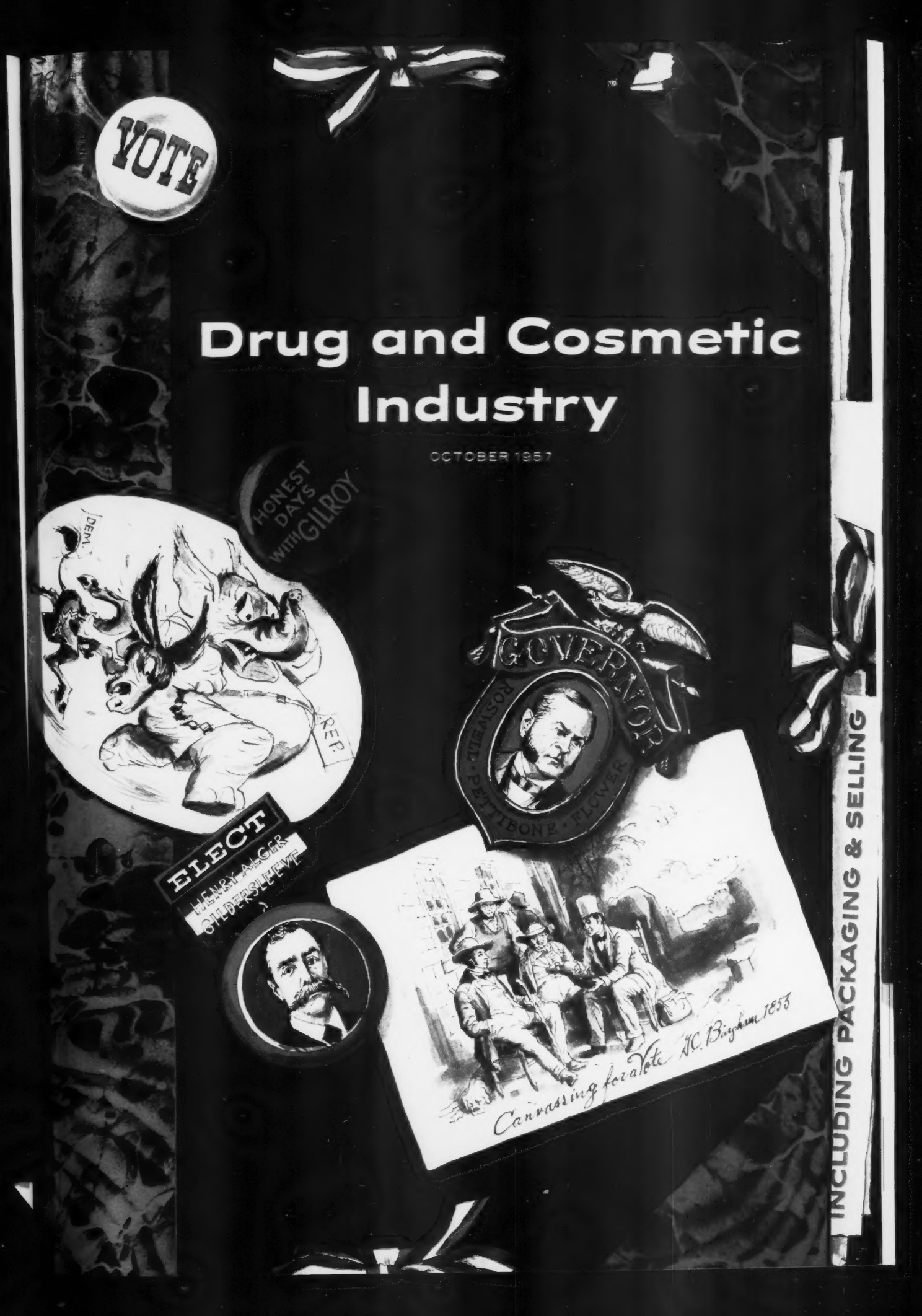

Drug and Cosmetic Industry

OCTOBER 1957

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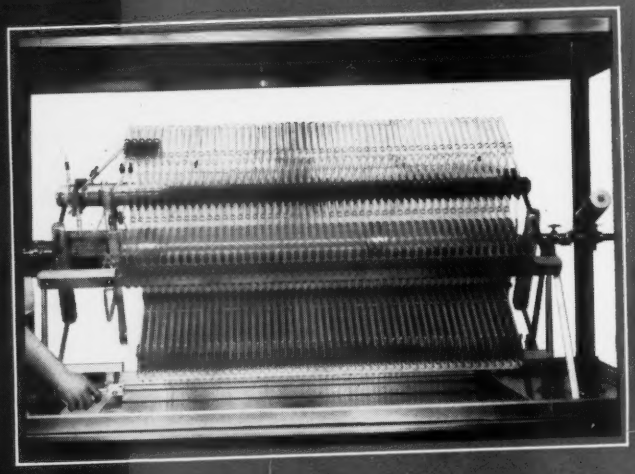

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Drug and Cosmetic Industry

Contents October 1957 Vol. 81 No. 4

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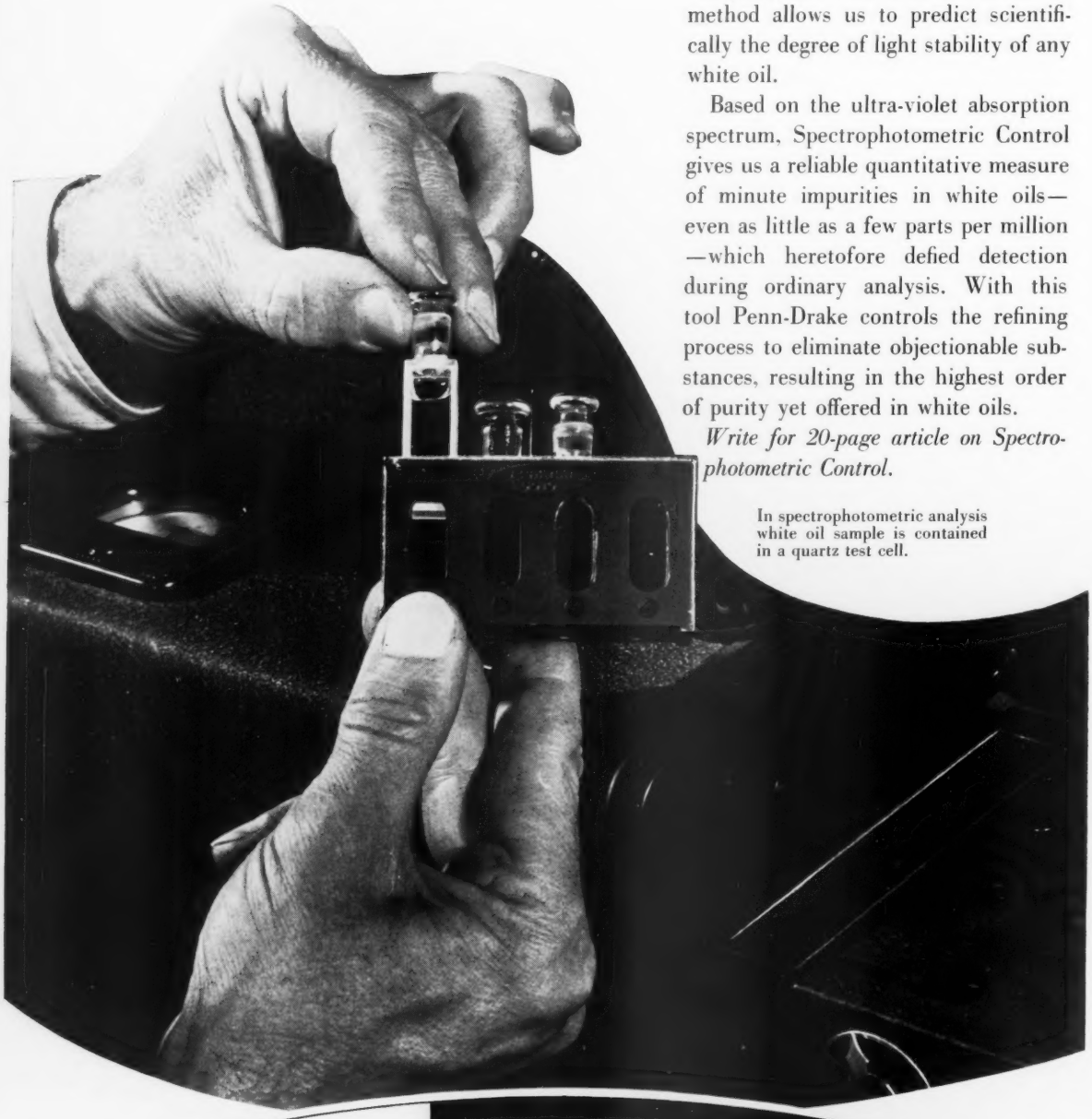

In spectrophotometric analysis white oil sample is contained in a quartz test cell.

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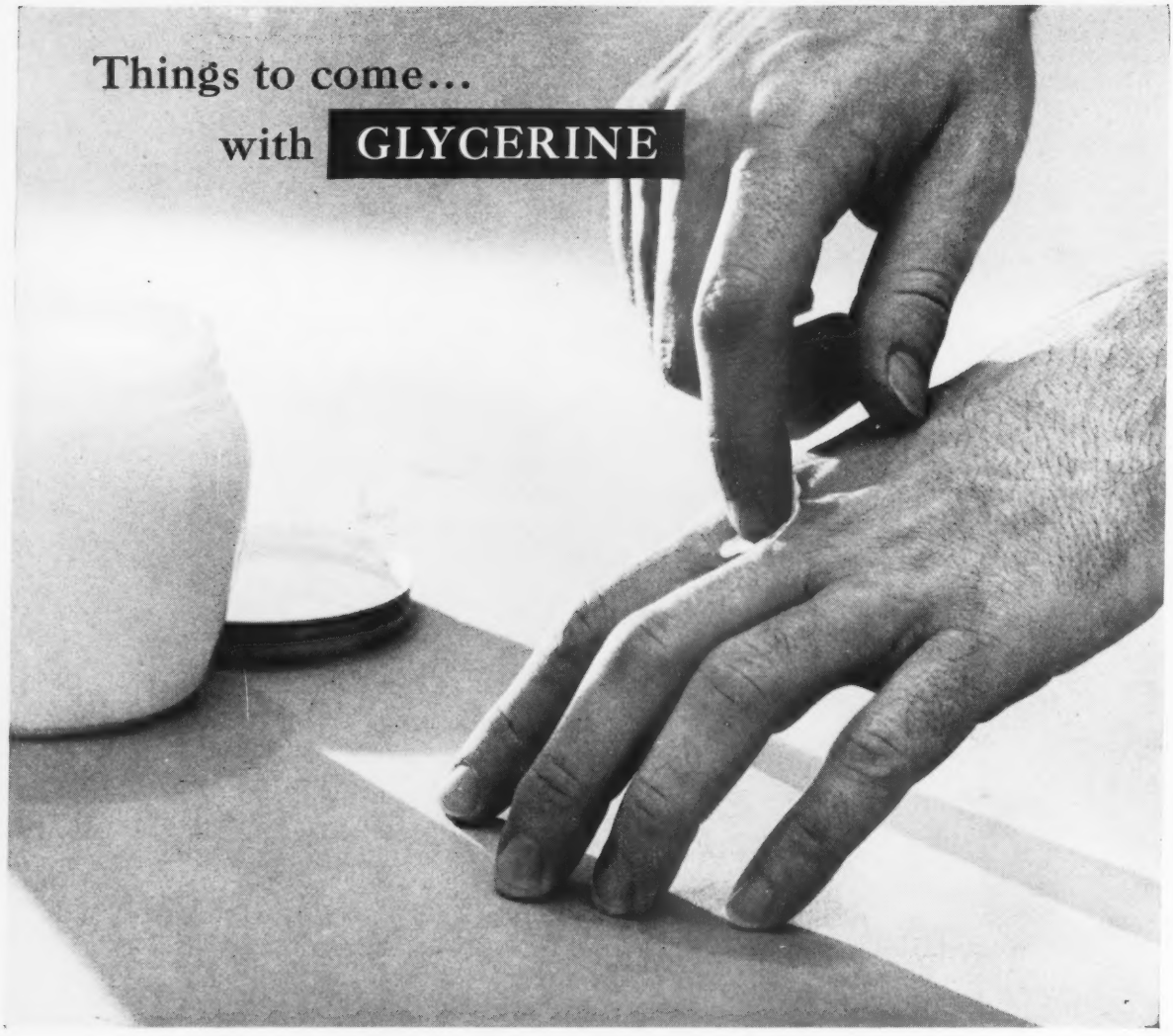

New skin fungicide with self-regulating action

A new fungicide* for skin infections, with Glycerine Triacetate as the active ingredient, duplicates on a small scale a completely self-regulating chemical process.

The fungicide works this way: Esterase, an enzyme present in skin, serum and in many fungi, hydrolyzes the triglyceride to glycerine and acetic acid — the chemical which actually inhibits the fungi. Accumulation of the acid, however, causes the pH to drop to a level which decreases esterase activity. This in turn slows up production of the acetic acid, keeping it well within physiological tolerance. As the acid is neutralized, the pH rises and the cycle starts again.

The new fungicide is expected to be marketed soon. Meanwhile, other triglycerides are under investigation as new chemotherapeutic agents.

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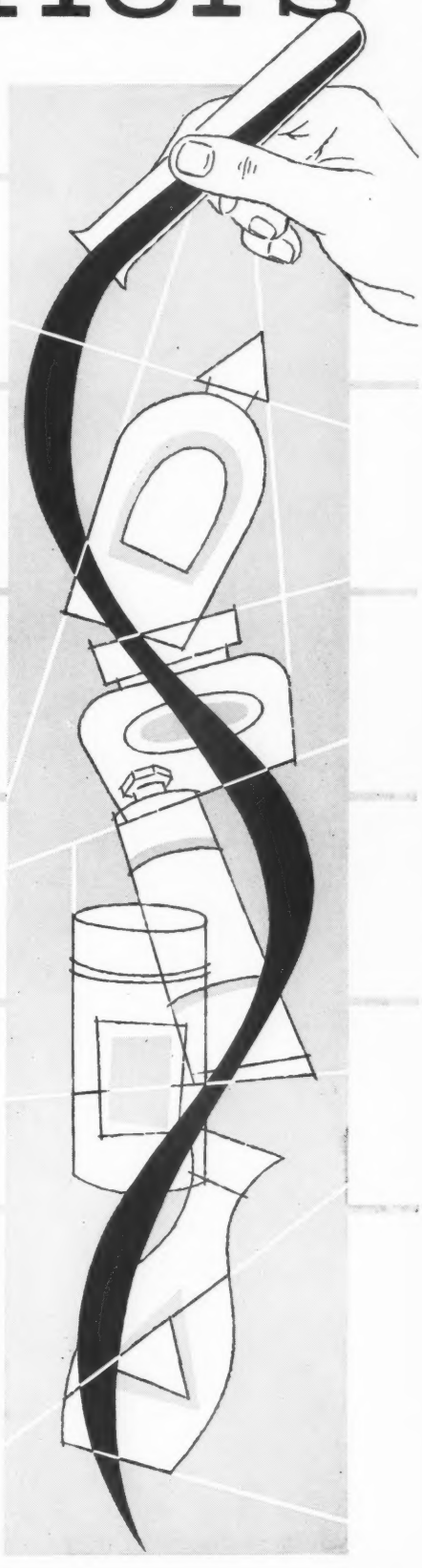

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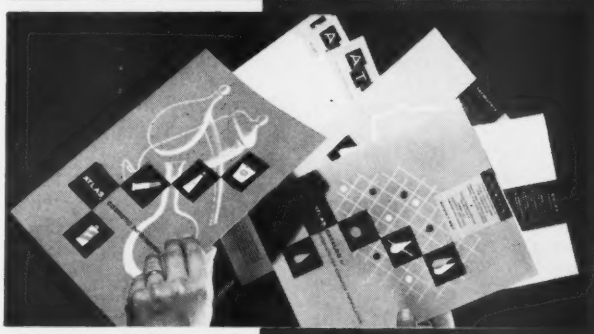
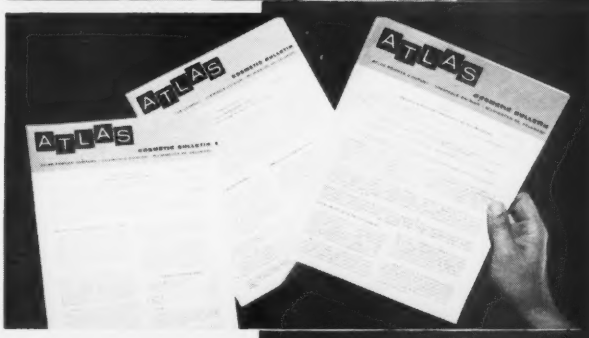


4 Latest news on formulas—from Atlas Cosmetic Bulletins

You can keep informed on newest ideas in ingredients, formulas, trends, by receiving our periodic Cosmetic Bulletins. Recent issues described formulation of cologne-type anti-perspirant sticks, how to make soap-free silicone creams and lotions, new unique ways to use non-self-emulsifying glycerol monostearate.



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ATLAS
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by Florasynth

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WE LIST HEREIN FLAVORS OF SPECIAL CHARACTERISTICS WHICH HAVE RECEIVED WIDE ACCEPTANCE:

SPECIAL LIQUID FLAVORS

	SUGGESTED USAGE TO 1 GALLON SYRUP
Caramellone Syntharome Imit. Butterscotch Flavor	1/4 to 1/2 oz.
Concentrated Imitation Butterscotch Flavor	2 ozs.
Concentrated Imitation Caramel Flavor	1 oz.
Imitation Tame Cherry Flavor 2:1	2 ozs.
Syntharome Imit. Wild Cherry Flavor Special	1/4 to 1/2 oz.
Imitation Wild Cherry Flavor 2:1	2 ozs.
Imitation Chocolate Aroma Flavor	2 ozs.
Cola Type Flavor 1:1	1/2 to 1 oz.
Cola Type Flavor 4:1	4 ozs.
Concentrated Lemon-Lime Flavor	1/4 to 1/2 oz.
Licorice Type Flavor 1:1	1/2 to 1 oz.
Syntharome Imitation Maplenut Flavor	1/2 oz.
Syntharome Imitation Raspberry Flavor	1/4 to 1/2 oz.
Syntharome Imit. Tutti-Frutti Flavor	1/4 to 1/2 oz.
Imitation Tutti-Frutti Flavor 2:1	2 ozs.
Imitation Rum and Butter Flavor	1/2 oz.

The indicated usages to the gallon of syrup are mentioned purely as indications for test evaluation work in manufacturer's own formulations.

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	SUGGESTED USAGE TO 100 LBS.
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Banana Imitation	2 to 4 oz.
Cherry Imitation	2 to 4 oz.
Cola Type	2 to 4 oz.
Grape Imitation	2 to 4 oz.
Lemon	2 to 4 oz.
Lemon-Lime	2 to 4 oz.
Lime	2 to 4 oz.
Loganberry Imitation	2 to 4 oz.
Maple Imitation	2 to 4 oz.
Orange	2 to 4 oz.
Pineapple Imitation	2 to 4 oz.
Raspberry Imitation	2 to 4 oz.
Root Beer	2 to 4 oz.
Strawberry Imitation	2 to 4 oz.
Tutti-Frutti Imitation	2 to 4 oz.

Other Entrapped Flavors Developed on Request

Standard Packing: 150 lb. containers

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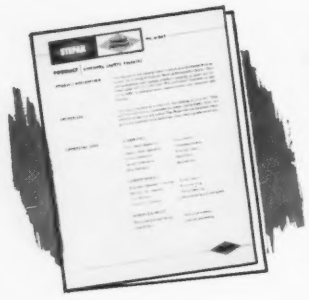
Stepanol WAQ	Sodium Lauryl Sulfate	Viscous liquid	28-30	1.5-3.0	0.3-0.8	1.4-1.8	7.5-8.5	8.67
Stepanol WA Special	Sodium Lauryl Sulfate	Clear viscous liquid	28-30	1.0-2.5	0.3-0.8	0.5-1.0	7.5-8.5	8.67
Stepanol ME Dry	Sodium Lauryl Sulfate	Powder	90-94	1.5-3.5	1.0-2.0	1.5-3.5	8.5-11.0	
Stepanol ME Dry AW	Sodium Lauryl Sulfate	Powder	90-95	0.5 Max.	1.0-2.0	1.5-3.5	8.0-10.5	
Stepanol WAT	TEA Lauryl Sulfate	Clear liquid	39.50-41.0	1.3-2.0	1.0-2.0	2.3-4.5	7.0-8.5	8.7
Stepanol DEA	DEA Lauryl Sulfate	Clear liquid	33.5-36.0	1.25-3.25	1.3-2.6	2.6-3.5	8.4-8.7	8.58
Stepanol AM	Ammonium Lauryl Sulfate	Viscous liquid	28-30	1.5-3.0	0.5-2.0	1.5-2.0	5.5-6.5	8.53
Stepanol T-28	Special Sodium Lauryl Sulfate	Viscous liquid	35.5 Min.				9.0	8.6



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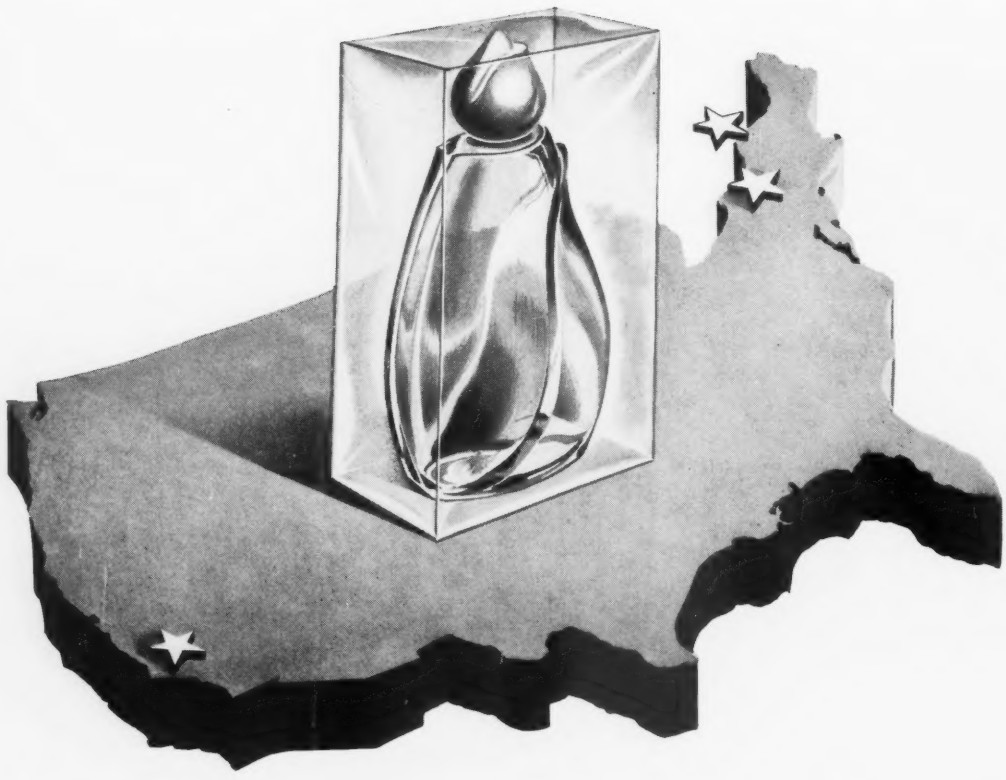

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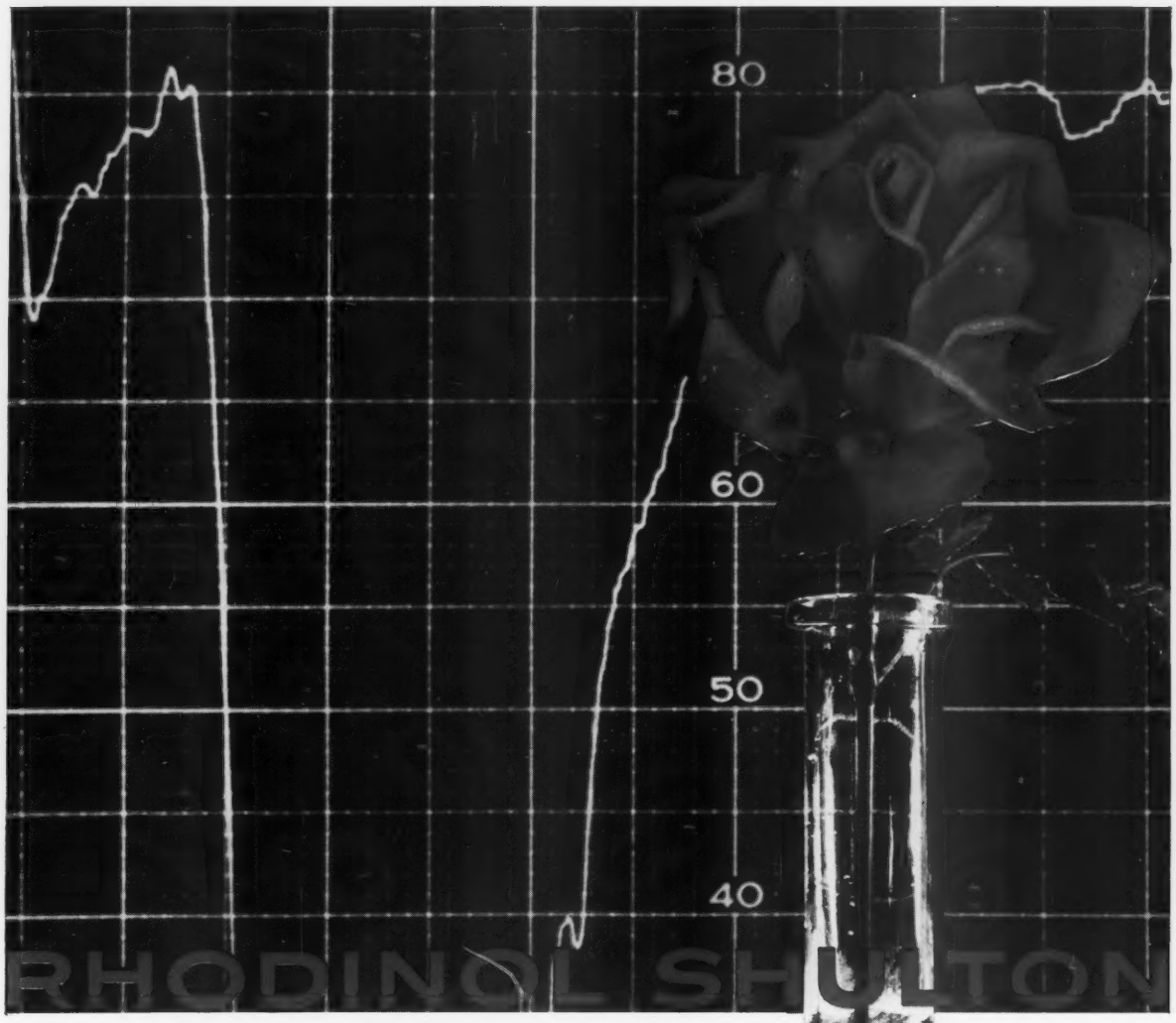

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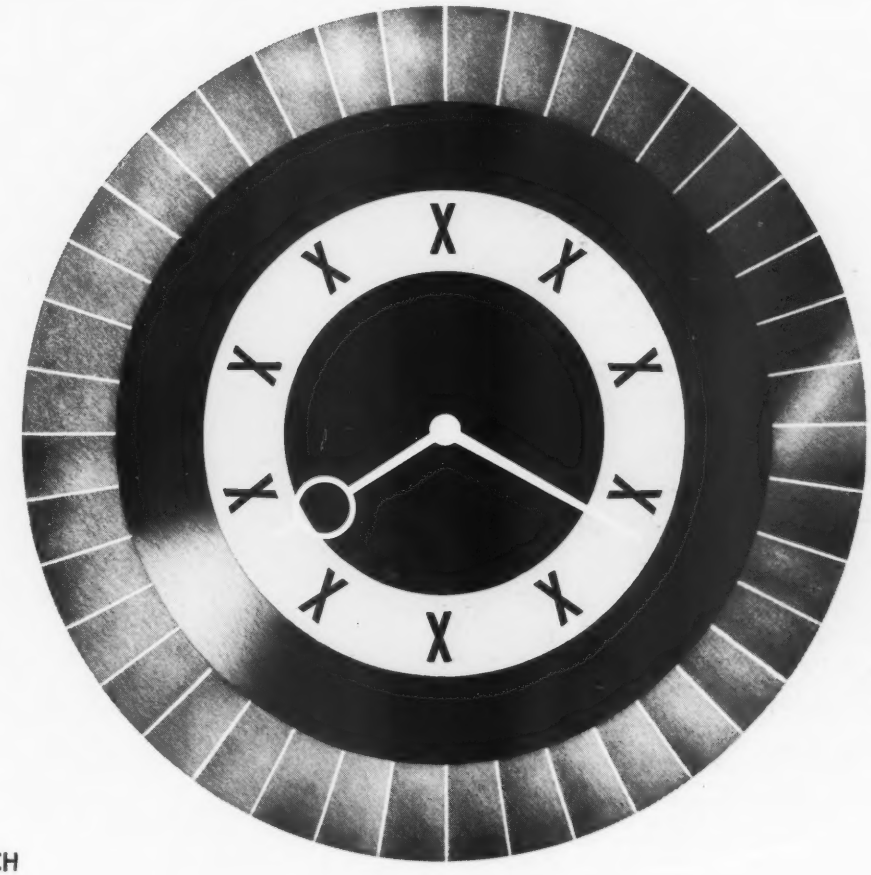

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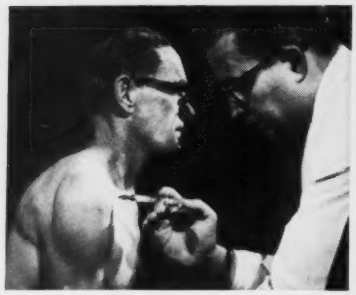
Clinicians Acclaim Superiority of Hydrocortisone

Recently the spotlight of comparative evaluation has been repeatedly focused on hydrocortisone in the treatment of many disorders. In impressive new publications, this steroid—the chief hormone of the human adrenal cortex—is accorded major commendation.[1-3] Thus, authoritative clinical judgment acclaims anew the advantages of hydrocortisone in the treatment of many diverse disorders in many patients. An editorial points to the superiority of hydrocortisone ointment in pruritus ani.[1] A monumental new *Dermatology* remarks that this corticoid is the best single medication for circumscribed neurodermatitis in any area.[2] The authors recommend topical hydrocortisone highly in many other dermatoses, and affirm the extreme rarity of significant local or general reactions to this type of therapy.[2] Systemic hydrocortisone is now recommended as life-saving in many geriatric patients unable to tolerate anesthesia or surgery without such hormonal treatment.[3]



Intra-articular hydrocortisone greatly relieves joint pain and stiffness in osteoarthritis.

Thus, as the clinical use of hydrocortisone has been extended on a vast scale through the years, notable advantages of this steroid have become established. Perhaps most striking is this fact about topical therapy: ***Many patients who fail to respond satisfactorily to available analogues of the hormone can be markedly benefited by hydrocortisone itself.***[1,4-6]

As the principal hormone of the human adrenal cortex, hydrocortisone may well be metabolized "more physiologically"—that is, in more nearly normal (or natural) chains of reactions than are certain of its congeners. Such considerations are highly significant in both topical and systemic use of the hormone since freedom from side effects is as important as pharmacologic potency.

So, in the intense competition of modern pharmacotherapeutics, hydrocortisone wins new high honors and, on the sound bases of clinically proved rationales, gains greater and greater markets.

References

1. Editorial: *J.A.M.A.* 162:732, Oct. 20, 1956.
2. Pillsbury, D. M., Shelley, W. B., and Kligman, A. M.: *Dermatology*, Philadelphia, Saunders, 1956, pp. 304, 414.
3. Howland, W. S.: *Geriatrics* 12:147-150, March 1957.
4. Smith, C. C.: *A.M.A. Arch. Dermat.* 74:414-415, Oct. 1956.
5. Frank, L., and Stritzler, C.: *A.M.A. Arch. Dermat.* 72:547-549, Dec. 1955.
6. Robinson, H. M. Jr. *et al. U. S. Armed Forces M. J.* 7:963-978, July 1956.

(Many additional references on request)

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Wins New

And You Win New Markets with

In the tests of time and searching investigation, the chief hormone of the human adrenal cortex has again and again been reported to be unexcelled in many clinical situations—and often has been designated the therapeutic agent of choice. Markets for this hormone, alone or in combinations for topical or systemic use, continue to expand rapidly.

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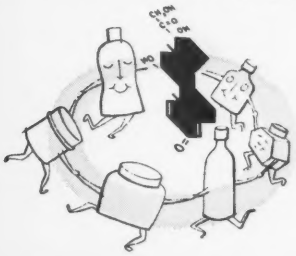
★ Today, the topical medication market already annually exceeds $100,000,000 . . .

★ Our population is already approximately 170 million—and growing—markets too are growing . . .

★ Longevity is at its greatest—and still increasing . . .

★ Skin disorders, eye conditions, osteoarthritis, and many other disorders in which hydrocortisone is often indicated are on the increase because almost 60 million U.S. men and women have become members of the "40-PLUS" group.



New Hydrocortisone Combinations Offer Enormous Potentials

The number of possible, therapeutically valuable hydrocortisone combinations with different drugs is large. Dosage forms are varied and this diversity of possible formulations is all the greater because of (1) the wide choice of available vehicles, with new types on the way, and (2) the variation in the concentration of each ingredient.

Tranquilizer plus hydrocortisone affords an antiarthritic medication which also relieves the commonly aggravating factors of anxiety and tension.

Certain vitamins plus hydrocortisone would seem to offer great promise in view of the increased vitamin needs in stress.

Sex hormones plus hydrocortisone are now advocated by clinicians who emphasize the anabolic effects of estrogen and androgen, especially in geriatrics.

Pyrilamine plus hydrocortisone for either topical or systemic use provides the clinically proved anti-histaminic effects of Pyrilamine in addition to the anti-inflammatory action of hydrocortisone.

Neomycin plus hydrocortisone for topical use is strongly endorsed when bacterial infection is present in inflammatory conditions.

Hematinics plus hydrocortisone may be useful in acquired hemolytic anemias if a complicating nutritional deficiency is present.

Analgesic (non-narcotic) plus hydrocortisone represents a combination of established value.

Local anesthetic plus hydrocortisone is a promising combination for local injection in the treatment of soft tissue lesions, as in fibrositis, tendinitis.

Vasoconstrictor plus hydrocortisone with or without an antibiotic has found extensive use as a nasal spray.

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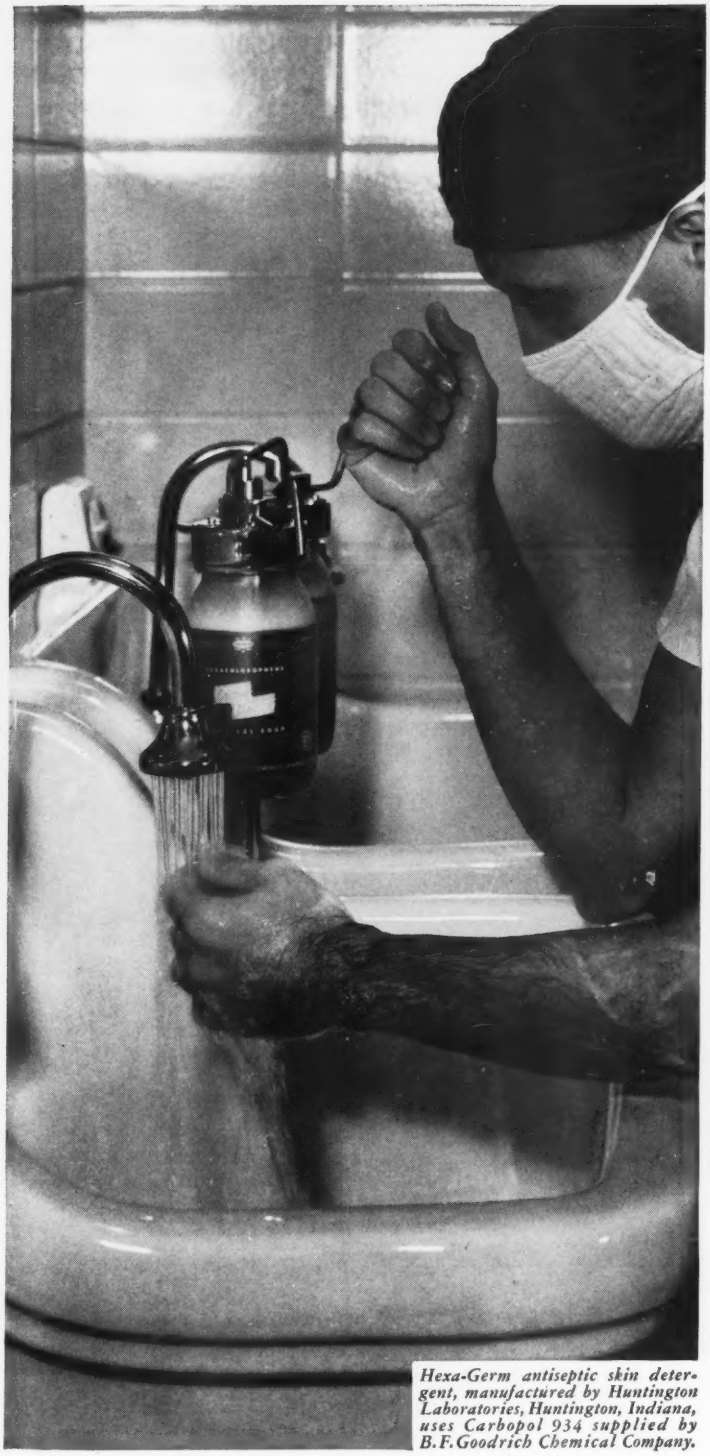

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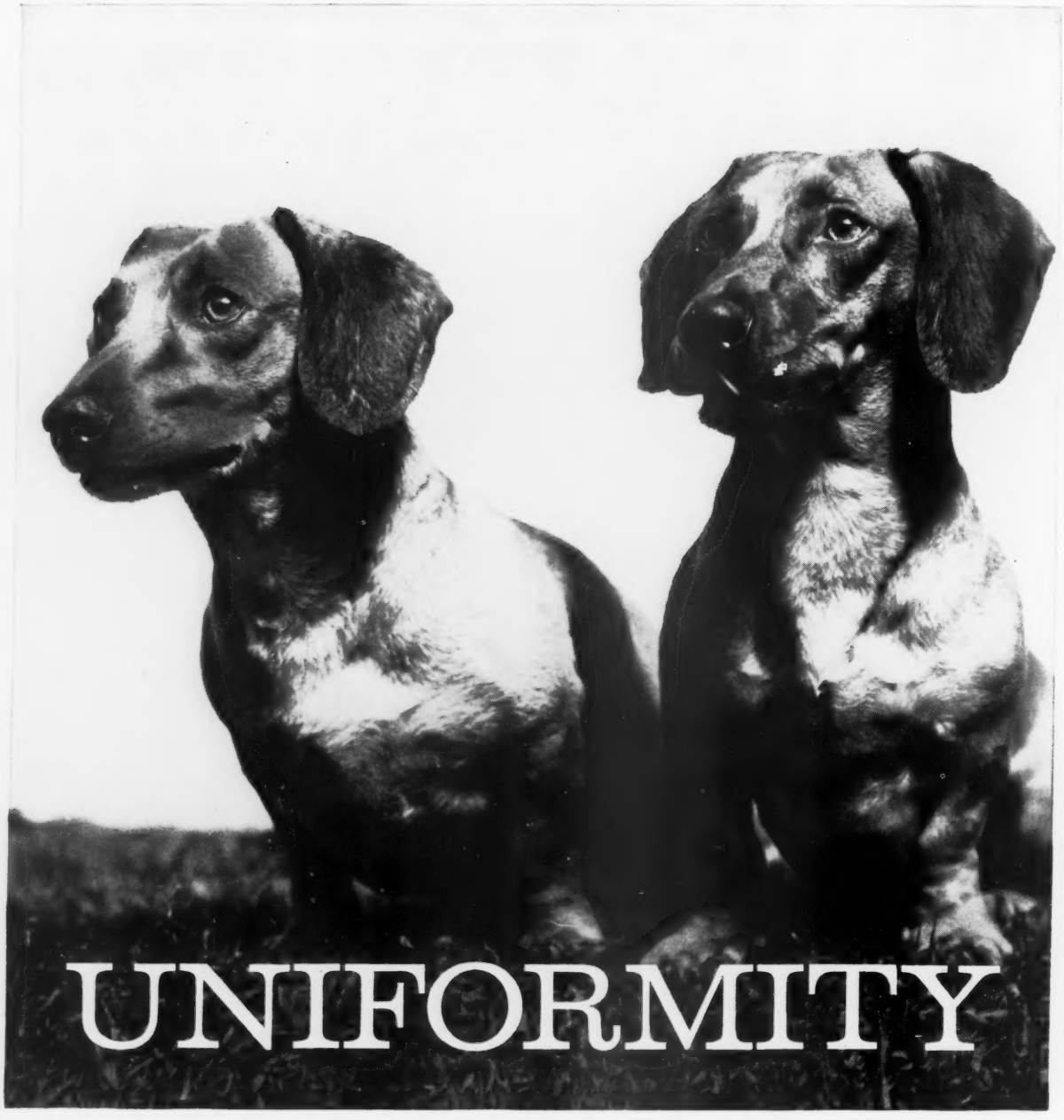

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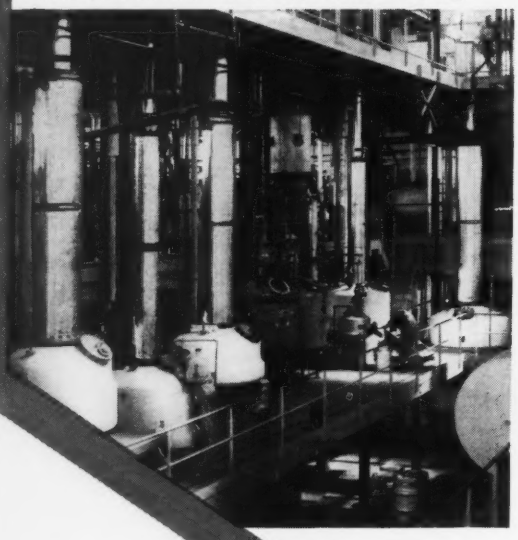

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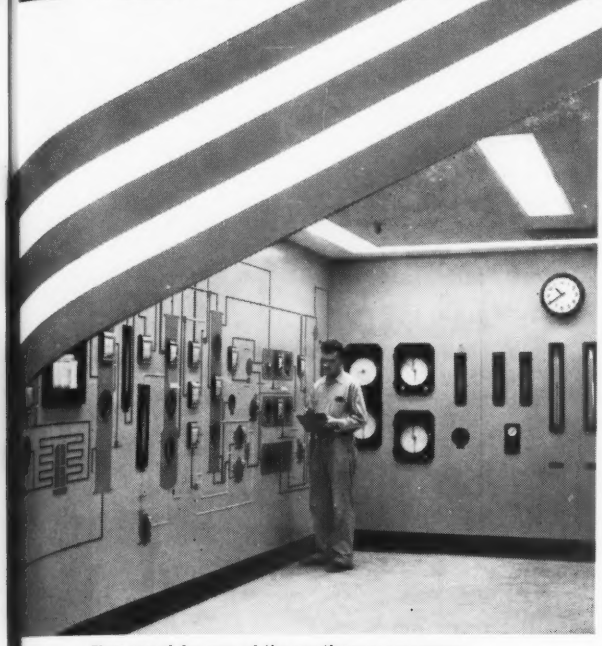

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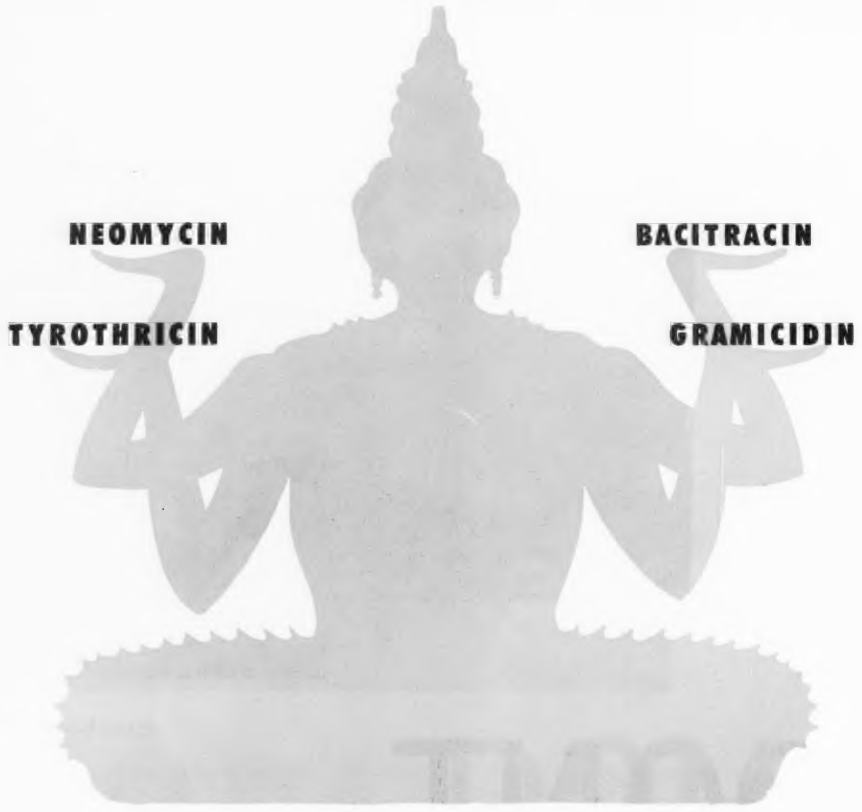

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Keeping Posted

Revlon, Inc.

In going through an analysis of Revlon, Inc., distributed last month by a New York investment house, we came across some strange figures and some strange statements. In the first place a chart showing the volume of "Toiletry, Cosmetic & Perfume Industry" from 1929 to 1956, quite properly gave the 1956 volume as $1.3 billion. However, the rest of the analysis was based on a volume of "Toiletry Items" which is shown to have a total volume for 1956 of $2,597,000,000. This is compared with a figure for "Prescription Products" of $1.491 billion, and a figure for "Packaged Medications (Proprietary)" of $1.336 billion, to indicate that Revlon's field is the biggest and that its opportunities for growth are greater than any other company.

But going back to the source from which the figure of $2.597 billion for toiletries, etc. was obtained, we find the following amounts which, by no stretch of the imagination, belong in a discussion of the business of Revlon. These are: False Teeth Adhesives and Cleaners, $15,680,000; Tooth Brushes and Dental Floss, $55,150,000; Hair Brushes, Combs, Hair and Bobby Pins, Pin Curl Clips, Hair Curlers, Electric Hair Dryers, Hair Nets, $139,680,000; Razor Blades, Razors, Razor Blade Sharpeners, Razor Strops, Electric Razors, Lather Brushes, $254,850,000; Powder Puffs, $17,740,000; Cleansing and Facial Tissues, Toilet Paper, Paper Towels, $405,920,000; Internal Chlorophyll Deodorants, $3,050,000; Toilet Brushes, Cotton Swabs, Sponges—Natural and Cellulose, Chamois, Bathroom Scales, $75,410,000.

When we deduct these figures plus some others that do not belong in a true estimate of the business done in what is generally termed cosmetics or toiletries, we get down to the $1.3 billion figure for retail sales of the cosmetic industry for 1956.

But using the figures which have been selected—$1.491 billion for prescription products, $1.336 billion for packaged medicines (proprietaries), and $2.597 billion for toiletries, the report deduces that "the toiletry industry is also large, approximating the combined sales of both the ethical and proprietary drug industries." This is despite the fact that sales of ethical drug manufacturers are upwards of $1.5 billion at manufacturers' levels, which means retail sales of about $3 billion, compared with a market for cosmetics and toiletries of $1.3 at retail levels. This means a total market for cosmetics and toiletries at manufacturers' levels of $650,000,000.

The report goes to great lengths to give the impression that "at least one-third of Revlon's sales are in non-cosmetic items, and that these new products are largely responsible for the company's growth." The "non-cosmetic" items mentioned are Satin Set—a hair spray, Clean and Clear—a liquid facial cleanser, and Silicare—a hand lotion. Sales of these items for 1956 are given at $26 million, 33 per cent of the 1956 total volume of $80 million. By what line of reasoning a hair spray, a liquid facial cleanser, and a hand lotion could be considered anything but cosmetics is beyond us. So far as we are concerned, Revlon is a 100 per cent cosmetic manufacturer despite the fact that the label on Silicare bears the legend "Revlon Pharmacal Division."

Amino Acids for Teeth

Having lived through the eras when calcium, phosphorus, vitamin D, ammonium compounds and urea, chlorophyll, penicillin, anti-anzyme chemicals, and whatever we forgot, were going to do away with tooth decay, we are now ready to roll with the use of amino acids for the same purpose. At the recent American Chemical Society meeting, Saul B. Needleman, Leonard S. Fosdick, and R. Quentin Blackwell, of the Northwestern University Dental School, told the Biology Section of ACS that a group of amino acids and

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peptide derivatives seem to inhibit the formation of tooth destroying acids found in the mouth.

According to "generally accepted theory," said Needleman, dental caries are often due to lactic and pyruvic acids formed by enzymes acting on residues of fermentable sugar found in the mouth. These glycoltic enzymes probably reside in microorganisms found in the plaque layer covering the tooth surface. Lots of chemicals have been tested as glycolytic inhibitors, including vitamin K, antibiotics, urea, and some common amino acids. Only a few of these had any significant effect on reducing bacterial count or preventing acid formation in the mouth, according to Needleman. Much more promising are the new amino acids, said Needleman. A total of 36 were prepared. Tests show that phthaloyl phenylalanyl compounds inhibit glycoltic enzymes. Of all the compounds tested, only those having a free C-terminal carboxyl group were active. C-terminal lysine and leucine residues seem to add to the action.

The bacteria in the mouth shouldn't be totally inhibited or killed, but glycoltic action should only be repressed. Going beyond this could upset the bacterial flora normally present in the mouth.

Lehn & Fink Reports

In reporting for the fiscal year closed June 30, Lehn & Fink points that the company has been working vigorously on "an aggressive acquisition program with a view to expanding the volume and variety of our products in diversified fields. During the year we acquired the business of Ogilvie Sisters, long established and well-known distributors of hair preparations. This has already given indications of becoming a profitable addition to our business. Our contacts with other enterprises are in various stages of investigation and negotiation."

The company says with regard to research: "Particular attention has been given to the expansion of the research program of our wholly owned German subsidiary, where scientific work is performed more economically than in this country."

Sales for the fiscal year totaled $27,321,471, up six per cent from previous fiscal year's total of $25,729,-138. Earnings were $1,242,608, up 28 per cent from the previous earnings of $963,972.

Britain Approves Salk Vaccine

Great Britain has decided to import Salk anti-polio vaccine from this country so as to offer vaccination to all children under 15 years of age and to all expectant mothers. The Ministry of Health announced the decision last month saying that it was removing the ban on the vaccine provided that the doses to be administered were first submitted to the same stringent tests for safety, potency, and purity as British vaccine.

It is well known that there has existed in Britain a sharp controversy over permitting importation of the Salk vaccine. However, in the face of the fact that there was a sharp rise in polio cases in Britain this past Summer, those in control apparently have been forced to give way to those who have been insisting upon the material being imported into the country.

Manufacturers' Deals

"May I stress the utter confusion that exists in the wholesale drug field because of the lack of uniformity in manufacturers' terms and discounts," Wyllis A. Bellinger, Rochester Drug Cooperative, recently asked in his presidential address before the annual meeting of the Federal Wholesale Druggists Association. "The variance in cash discounts, predicated on deals including 'extra' goods, 'bonus' goods, etc., makes the goal of a basic 'net price' seem almost impossible. Each of you has his own problems and policies, but consider your distributors who have to live with all of them. Some manufacturers now have two different cash discounts on different items in their lines, and for wholesalers to obtain them other manufacturers still demand payment before the merchandise is received at the warehouse. One case has been reported that a shipment—paid for—was frozen on a railroad siding, another, paid for, was lost en route, while payment was due for the third order eight days before it arrived.

"Wholesalers' capital costs the same interest rate as any other. The same thing goes for special deals. The sales department of each manufacturer spends many hours working out deal after deal, but we wholesalers have the accumulation of those of many manufacturers pouring in daily, and we have to try to assimilate and understand all of them so that they may be presented to our customers in an intelligent manner.

"If the horizon appears muddy with a diversity of cash discounts and special offers, we hope that some sunlight is appearing in the adoption of uniform 'return goods' policies by manufacturers. It is for this reason that one pharmaceutical manufacturer's program of 100 per cent exchange replacement from retailers regardless of age of package, if approved by a company salesman or a note from headquarters, brings a ray of hope in a confused field."

Ultraviolet Spectral Data

Organic Electronic Spectral Data, Silver Spring, Md., is engaged in preparation of what is claimed to be "the most comprehensive collection of ultraviolet spectral data ever attempted." It is said the collection may include descriptions of as many as 50,000 ultraviolet absorption spectra of organic compounds. Purpose of the project is to make available in one definitive reference a majority of such data published since the outset of the photoelectric era. Forty scientists from governments, industry, and universities are cooperating and the material is being abstracted from 65 journals in eight languages. Since the start of the project, early this year, over 21,000 spectra have been collected.

The first two-volume set of Organic Electronic Spectral Data will be published in 1958 by Interscience Publishers, New York, under the editorship of Dr. Mortimer J. Kamlet, of the U.S. Naval Ordnance Laboratory of White Oak, Silver Spring, Md., and Dr. H. E. Ungnade of the Los Alamos Scientific Laboratory and president of OESDI. It will cover the literature from 1946 to 1955 and will probably run more than 2,000 pages.

Meanwhile, OESDI can use a few additional abstractors to help in this work. Dr. Kamlet says that the ab-

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stracting is nearly on schedule to meet the 1958 publication date, but because of the large number of spectra in recent years, abstractors can be used who can handle as well as foreign language journals.

The final treatment of the spectral data, particularly naming and indexing, will depend on the financial support which the project receives from interested sources. The initial arrangement of the collection is based on molecular formulas and compound names used by authors.

More P. & G. Aid-to-Education

Procter & Gamble is increasing its aid-to-education to nearly $1 million annually through a new plan of long-term, unrestricted grants to ten leading national universities and to 39 state and regional associations of smaller independent colleges. The ten universities, each receiving $20,000 annually, are those that "over the years have grown to become national rather than local in significance and are widely recognized for their emphasis on excellence in scholarship." They draw students from and send graduates back to all parts of the country. These universities are: Chicago, Columbia, Cornell, Harvard, Massachusetts Institute of Technology, Northwestern, Pennsylvania, Princeton, Stanford, and Yale.

Through gifts of $110,000 annually to state and regional associations, P. & G. will be contributing in a measure to 465 colleges and universities in all parts of the country, with a total enrollment of more than 400,000 students.

The new direct plan, which it is hoped will be continued for at least five years, brings P. & G.'s total annual aid-to-education program to: $400,000 for scholarships to 240 young men and women in 52 colleges and universities; $110,000 for post graduate fellowships at independent and tax-supported colleges and universities; $80,000 for contributions to the National Fund for Medical Education, The United Negro College Fund, and other special grants in the field of higher education; $110,000 for distribution to the 39 state and regional associations of small and medium size independent college and universities; $200,000 for distribution on the basis of $20,000 each to ten leading national universities.

Antibiotics Exhibit for Brussels

A scientific exhibit on the origin, nature, and action of antibiotics, designed and sponsored by a group of U.S. manufacturers, will be a major feature of the participation of the United States in the 1958 Brussels Universal and International Exhibition, to be held from April 17 to October 19, 1958. The exhibition will be housed in the section of the two and a half acre International Science Pavilion devoted to "The Molecule," one of the four subjects around which the scientific displays will be organized. The other three themes are The Atom, The Living Cell, and The Crystal. Development of the "molecule" section of the science exhibit for American participators is under the direction of a committee headed by Dr. Henry Eyring, Dean of the Graduate School of the University of Utah. Dr. Max Tishler is consultant for the committee to the antibiotics exhibit and Dr. Randolph T. Major, professor of chemistry at the University of Virginia, is its chief investigator.

The antibiotics exhibit, with Axel Horn as designer, is aimed primarily at scientists and at scientifically oriented laymen. It will occupy an area of approximately a thousand square feet in one corner of the International Science Hall, but Horn's unique design effectively doubles the space available by ranking the displays through two levels connected by a gently winding ramp. Many of the displays will consist of actual instruments and machines used in antibiotic research and production. Elsewhere, animation, color, light, and motion pictures have been used freely to show in dynamic form the processes involved. All texts will be in French, English, and Flemish.

The entire exhibit is being financed by Lederle, Lilly, Merck-Sharp & Dohme, Parke, Davis, and Pfizer, each of which companies has contributed $10,000 to the project. In addition, the companies have donated apparatus to the exhibit, and top scientists in these and other firms, as well as Rutgers Institute of Microbiology, have contributed time and ideas.

The National Science Foundation is responsible for administering, coordinating, and funding the U.S. program for the International Science Pavilion.

Wunder-Skin Bought

Wunder-Skin, healing antiseptic medication for acne has been bought from the Purepac Corporation by I. R. Rill, who with a group which he headed also recently acquired from the Block Drug Company Alkaid, antacid mint tablet. The recently formed Ameril Drug Company, of which Mr. Rill is president, is national sales and distributing company for the two products. The Alkaid purchasing group included Harry Maizlish, director of Crowell-Collier and former president of Warner Brothers KFWB, Los Angeles; Morton Sidley, executive vice-president and general manager KLAC, Los Angeles; and Jack Stadler, director of planning of Norden-Ketay Corp. (electronics). Sales of Alkaid at retail is said to be about half a million dollars—5 million rolls or 60 million tablets.

The Ameril Drug Company plans to add other products to its sales and distributing program to develop a full line of popular-priced publicly appealing drug products.

Proposed Return Goods Policy

The Industrial Relations Committee of the American College of Apothecaries has drawn a recommended returned goods policy for pharmaceutical manufacturers. The essential parts of this policy include: (1) Full credit allowed or exchange granted on unopened trade packages up to five years after date of manufacture; (2) Fifty per cent credit allowance on unopened packages purchased more than five years prior to date of return; (3) No credit or exchange given on broken trade packages with the exception of packages bearing expiration dates; (4) Non-direct purchases should be accepted for return by wholesalers from whom they are purchased while direct purchases should be returned to the company; (5) If return authorization is required, process would be expedited if manufacturer would supply return authorization forms which would provide for information enabling manufacturer to determine if merchandise is returnable thus preventing misunderstanding. If desirable, a uniform authorization form could be designed.

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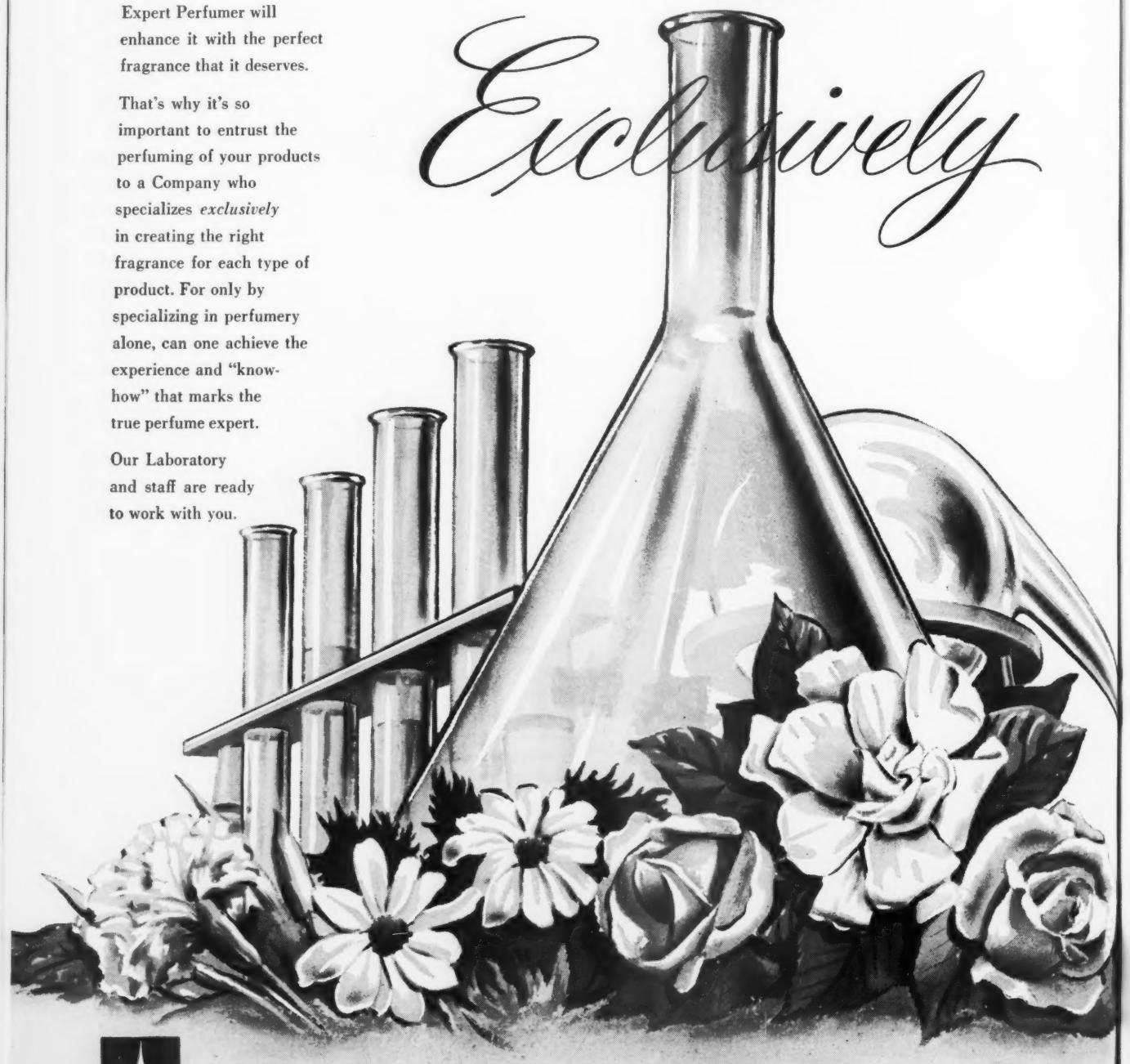

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Medical and Hospital Insurance

The number of persons insured against hospital and surgical expenses through insurance company policies has been increasing at an accelerated pace in recent years, according to the Health Insurance Institute. The growth rate in the last three years of both forms of coverage has risen markedly with each succeeding year. According to figures supplied by the nation's insurance companies, there were 66.3 million persons covered for hospital expenses at the end of 1956 through individual and family health policies and through group insurance programs, a 79 per cent increase over the 1950 total of 37 million.

A closer examination of this growth trend over the past three years shows a constantly faster rate of expansion in hospital expense protection. In 1954 there was an increase of 5.9 per cent over 1953 in the number of people covered, the percentage gain in 1955 over 1954 was 7.9 per cent, and the rate of growth in 1956 over 1955 was 11.1 per cent. Surgical expense insurance, which helps pay the cost of operations, included some 63 million persons covered in 1956 through policies available from insurance companies. Compared with the 1950 total of 33 million, the rate of growth in the number of people protected was 91 per cent during this six-year period.

As with hospital expense insurance, the yearly increase in the number of people with insurance policies covering surgical expenses has accelerated during the past three years. The rate of growth in 1954 was 4.6 per cent over 1953; in 1955 the increase was 7.3 per cent over 1954; and 1956 recorded a rise of 11.1 per cent over 1955.

Regular medical expense insurance, providing for doctor visits for non-surgical care,—a relatively newer form of health insurance—rose 281 per cent in the number of people covered between 1950 and 1956. By the end of last year, there were 29.8 million persons included in policies available from insurance companies, compared with 7.8 million in 1950. Comparing the growth trends of regular medical expense insurance during the past three years, the Institute reports a 12.9 per cent increase in 1954 over 1953; 20.8 per cent in 1955 over 1954; and 18.9 per cent in 1956 over 1955. The newest form of health cost protection, major medical insurance, outpaced all other forms of coverage. Introduced by insurance companies in 1948, major medical expense policies help cover the costs of serious, or catastrophic illness, including hospital bills, physicians' charges and other medical care services, and are available alone or as a supplement to the other types of expense policies. At the end of 1952, when the first accurate records were available, there were some 689,000 persons in the nation with major medical coverage. In the four years since, this form of health insurance rose at an unprecedented rate of 1,188 per cent, for a total in 1956 of 8.9 million persons. A recent estimate of the Health Insurance Council states that, as of May 1, 1957, this total exceeded 10 million persons, demonstrating a continuance in the rapid growth of this form of insurance against the cost of illness and accident.

By the end of this year, the Institute predicts that more than 123 million people, or close to 75 per cent of the U.S. civilian population, will be protected by some form of health insurance designed to help pay hospital, doctor, or other medical care bills. Breaking down the national totals on health insurance coverage for 1957, an estimated 109 million persons will be covered for surgical expenses, 74 million for regular medical expenses, 13 million for major medical expenses, and 43 for loss of income, in addition to 123 million protected against cost of hospital bills. Health insurance today covers more people than any other type of insurance in force.

Total health insurance benefits paid out this year by insurance companies, Blue Cross-Blue Shield and miscellaneous plans, will amount to an estimated $4.2 billion, as compared to $3.6 billion in 1956.

Bacitracin Regulation Changes

Regulations pertaining to the certification of bacitracin and bacitracin-containing drugs have been amended by the Food and Drug Administration as follows:

"They may contain cortisone or a suitable derivative of cortisone and one or more suitable antitussive drugs.

"In addition to the labeling prescribed for bacitracin-neomycin troches and zinc bacitracin-neomycin troches, each package shall bear on the outside wrapper or container and the immediate container, the number of milligrams of tyrothricin in each troche of the batch, and if it contains cortisone or a derivative of cortisone or one or more antitussive drugs, the name and quantity of each such substance."

Another paragraph also refers to labeling and printed matter. The order became effective on the date of issue, September 17, "since it was drawn in collaboration with interested members of the affected industry and since it would be against public interest to delay providing for the amendments set forth above."

South Carolina Fair Trade Void

Now that the Supreme Court of the State of South Carolina has declared the non-signer clause of the fair trade act of that state unconstitutional, there is now a total of fifteen states plus the District of Columbia in which fair trade is unenforceable. Of these fifteen states, ten have declared the non-signer clause invalid, but have let the balance of the act remain in effect. These ten states are: Arkansas, Colorado, Florida, Georgia, Indiana, Louisiana, Michigan, Oregon, South Carolina, and Utah. Two states have declared their entire fair trade acts unconstitutional. These two states are: Nebraska and Virginia. In three states, Missouri, Texas, and Vermont, as well as in the District of Columbia, no fair trade act has ever been in existence.

Of the 33 remaining states, the supreme courts of fifteen have declared their fair trade acts constitutional. These states are: California, Connecticut, Delaware, Illinois, Maryland, Massachusetts, Mississippi, New Jersey, New York, North Carolina, Pennsylvania, South Dakota, Tennessee, Washington, and Wisconsin. In the eighteen remaining states, there have been no supreme court decisions on the validity of the fair trade acts. These states are: Alabama, Arizona, Idaho, Iowa, Kansas, Kentucky, Maine, Minnesota, Montana, Nevada, New Hampshire, New Mexico, North Dakota, Ohio, Oklahoma, Rhode Island, West

Virginia, and Wyoming. Kentucky has outstanding lower court decisions unfavorable to the fair trade act, which decisions are in the process of appeal, but which are not at present legally binding on the status of fair trade in that state.

The latest decision against fair trade, that of the Supreme Court of South Carolina, was a unanimous one by a five-member court which upheld a county court ruling in a case brought by General Electric Co. against Roger-Kent, a general retail mercantile business.

F.T.C. Stops Bishop Hair Experts

Bishop Hair Experts, Cincinnati, has had issued against them an initial order of a Federal Trade Commission hearing examiner which prohibits them from claiming to be able to prevent baldness and grow hair. The examiner ruled that the firm has falsely advertised that baldness can be overcome and hair will be induced to grow in most every case. The uncontradictated and unanimous testimony of three highly qualified dermatologists is that from 85 to 95 per cent of all baldness is of the male pattern type, the cause of which is unknown.

For this type of baldness, these experts testified, Bishop's preparations will not (1) prevent or cure it, (2) restore or grow hair, (3) permanently correct itching, dandruff, oiliness, or dryness, or (4) replace fuzz or thin hair with thicker or stronger hair. Accordingly, the examiner's order requires the concern to limit its claims to cases other than the male pattern type. Its advertising also must clearly and conspicuously reveal that the preparations are of no value whatever in the great majority of cases.

The firm's operations, according to FTC, are divided into two parts, office and home treatment. In the former, the customer has his scalp looked at in the company's offices in Cincinnati, Pittsburgh, or Buffalo, and has a course of treatment prescribed. Frequently this means sixty visits at $5.00 each, with a discount for lump-sum payment in advance, plus the purchase of four cleansing agents and a hair brush. To reach customers in other cities, the examiner continued, the concern advertises extensively the arrival of a "trichologist" in a local hotel room. Those who respond have their scalps looked at and treatment recommended and are sold, at a price ranging from $65 to $75, a Home Treatment Kit which costs Bishop $4.15. This kit contains a three months' supply of the cleansing agents, plus 64 two-dram vials of other preparations plus an instruction book.

Not French Fragrances

Maxwell Distributing Co., Newark, N. J. has been ordered by the Federal Trading Commission to stop representing that perfumes, colognes, and toilet waters made in this country are French imports, and to stop making fictious pricing claims. Prohibited statements are "the fragrance created in France," "blended in the French tradition," and "Paris-New York." Also prohibited are the use of French names on the labels, such as, "La Vie en Rose," and "Le Couturier," the name "Paris," and a portrayal of the Tricolor of France unless affirmative disclosure of domestic origin is made.

Schering-White Merger Complete

The stockholders of Schering Corporation and White Laboratories voted in separate meetings to approve the merger White Laboratories into Schering Corporation, the surviving company. Schering stockholders voted to split the company's outstanding stock (1,760,000 outstanding) two shares for one with an increased par value of $1.00 per share, against 15 cents per share for the old. Six million shares of the new stock were authorized with the remaining stock not needed for the split and for the White acquisition remaining in the treasury for future needs.

White Laboratories, which had 274,593 shares of common stock outstanding, was purchased at the rate of 1½ shares of the new Schering common stock plus one share of a new series of Schering 5 per cent cumulative preferred stock with a par value of $30 for each share of White Laboratories stock.

Since Schering stock closed at about $74 per share on the day the merger was approved, the purchase price of White Laboratories to Schering stockholders figures out to be approximately $23,340,405. This is arrived at by taking the value of 1½ shares of the new stock ($37 per share) or $55, plus $30 for a share of the new preferred, and multiplying this total of $85 by the number of White Laboratories shares outstanding (274,593).

It is stated by Schering that the merged companies have current consolidated sales in excess of $75 million. Since Schering had net sales of $54,554,000 in 1956, it would appear that White Laboratories sales are in the neighborhood of $20 million.

While White Laboratories and its subsidiary, Pharmaco, Inc., will continue to operate under their present names, activities of Schering's proprietary drug subsidiary, Union Pharmacal Co., will be merged with those of Pharmaco.

Medical Research and Education

Health, Education, and Welfare Secretary Folsom has appointed a committee of medical leaders and industrialists to advise him on the "status and future needs" of medical research and education. The chairman is Dr. Stanhope Bayne-Jones, former dean of Yale Medical School and more recently president of the New York Hospital-Cornell Medical Center joint administration board and head of medical research and development for the Army. Dr. Charles Kidd, of National Institutes of Health, will serve as executive secretary. Other members are:

Thomas P. Carney, Eli Lilly and Company; Robert C. Swain, American Cyanamid Company; George Packer Berry, Medical School, Harvard University; Lowell T. Coggeshall, University of Chicago; Fred Carrington Cole, Tulane University; Samuel Lenther, E. I. duPont de Nemours & Co.; Irvine H. Page, Cleveland Clinic Foundation; Stafford L. Warren, University of Oklahoma Medical Center; and James Edwin Webb, Republic Supply Co., Oklahoma City, former Under Secretary of State and former director of the Bureau of the Budget.

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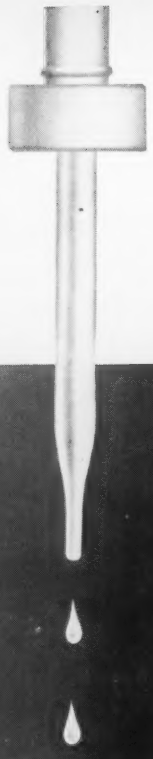

GOODMAN and GILMAN state:

"In many instances, however, the iodides are effective therapeutic agents and are of particular value in the treatment of *hyperthyroidism*, the *prophylaxis of goiter*, and as *expectorants*."

— Goodman and Gilman, THE PHARMACOLOGICAL BASIS OF THERAPEUTICS, Second Edition (Page 827). Published by The Macmillan Company (1955).

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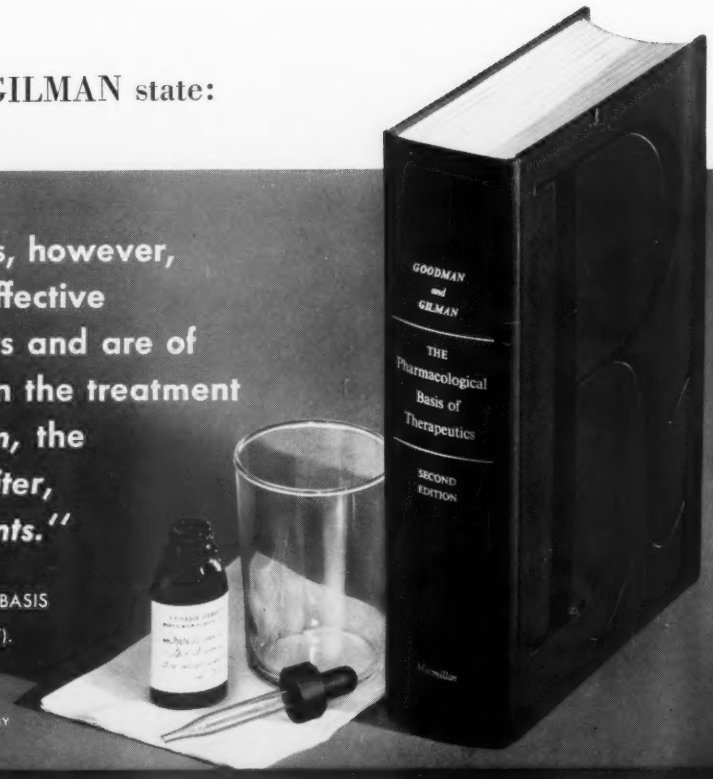

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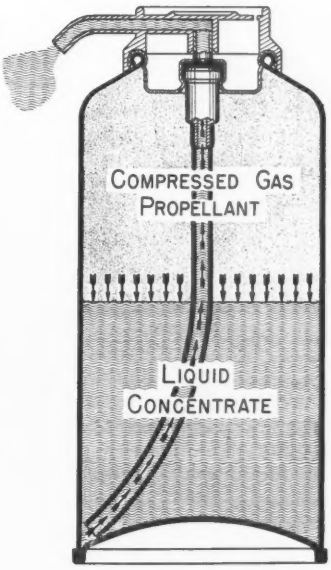


An exciting new development about ready to become a reality is the use of nitrogen as a propellant in pressurized packages instead of the more familiar hydrocarbons and their halogen derivatives. Precision Valve Corporation has been developing this technique for the past two years, Crown Cork & Seal Company have collaborated and production of finished packages is under way at Aerosol Techniques, Inc. and Continental Can, which participated in this development along with other packagers. The packages, with compressed nitrogen gas as the propellant, will not produce foams or sprays, but will conveniently deliver the product in its original form as a liquid, cream or paste. The organizations responsible for the development express almost unlimited enthusiasm for this push-button and one-handed dispensing of foods, cosmetics and all types of pharmaceuticals. Certainly a blue ribbon list of manufacturers in these fields is already deeply involved in this new technique.

Essentially, the nitrogen pressure pack, free from patent restrictions, provides new convenience at a low price in dispensing all products from thin liquids to thick pastes with viscosities up to 100,000 cps in their original, unaerated form from cans, and free from restrictions imposed by capped bottles, jars and collapsible tubes. Pressing a button, dispenses the liquid, syrup, lotion, cream or paste directly to the teaspoon, water tumbler, skin-surface or toothbrush. These may be external cosmetics or ointments, liquid syrups or medicinals, food concentrates or dentifrices.

Technically, the principle is simple and old. Gas pressure, in this case the inert nitrogen, pushes the product up and out through a tube whose lower end is immersed in the liquid or paste. This is, of course, the principle of the liquified gas aerosols but with the essential difference that the compressed nitrogen propellant is not soluble in the concentrate, nor miscible with it nor emulsified with it. Thus the material ejected does not form a spray or foam by instantaneous evaporation of liquefied gas. The newly perfected system is an extension of pressurized packaging, not in any way a replacement for two or three phase spray or foam products.

The package consists simply of a can, the product to be dispensed, the dip tube, the valve and nitrogen gas at 90 psig. Since no liquefied gas is present the temperature-pressure gradient is quite flat, pressure at 70° F. being 90 pounds but only 105 pounds at 130° F. Although drawn cans may provide an additional safety factor, fabricated cans are also satisfactory. Containers are of the standard 6 ounce size, but larger cans may be used if desired; plastic or coated or uncoated glass bottles are not recommended. The gas pressure is ample to assure complete discharge of contents. Each product will represent a new problem in the balance of head space, valve openings, and dip tube diameter. For a specified time to discharge the desired quantity of product, depending upon flow qualities, the head space will determine the amount of gas available for propulsion while the dip tube and valve openings will determine the discharge. The upper limit of viscosity of the product to be dispensed by nitrogen under pressure, is set not only by flow of the product through the dip tube and the valve orifices, but also by flow to cover the bottom of the tube when the can has been placed on its side and then turned into an upright position. A special filling technique is required to leave the dip tube filled, otherwise a hole would be blown in the mass, with loss of gas, when the first discharge is attempted.

Several advantages accrue to the use of compressed nitrogen as a propellant. As in liquefied gas packs, no oxidation is possible, but in addition, the propellant will not hydrolyze, which protects the product and may permit the use of aluminum containers. The absence of liquefied gases also seems to have eliminated seepage loss. Although usual aerosol packages lose some weight on standing because of losses through the gasket, nitrogen pressure packages remain constant in weight over long periods of time. A particular bonus for foods, pharmaceuticals and some cosmetics arises from the fact that with compressed nitrogen gas as

(*Continued on page 530*)

Pharmaceutical Fermentations*

BY SAMUEL C. BEESCH and G. M. SHULL CHAS. PFIZER & CO., INC. BROOKLYN 6, N. Y.

Several interesting developments in antibiotics have appeared during the past year. One is the use of metaphosphate in tetracycline formulations, which reportedly increases early blood levels of the antibiotic. Another is the marketing of combinations containing mixtures of two different antibiotics which behave synergistically. This development is said to mark the beginning of a third era—narrow spectrum antibiotics represents the first and broad spectrum the second. Examples of these combinations are Signemycin (tetracycline-oleandomycin), Alba-Pen, and Cathacillin (penicillin-novobiocin). Actually, however, these are antedated by Combiotic (penicillin-streptomycin) and various combinations of streptomycin with INH

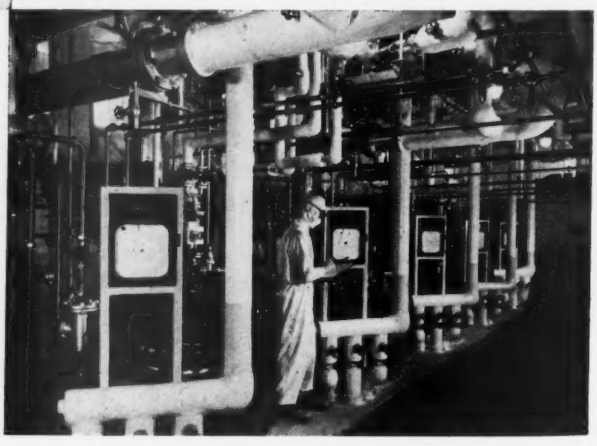
(isoniazid), PAS (4-aminosalicylic acid), or oxytetracycline which are useful in tuberculosis therapy.

From the organic chemical standpoint the year was particularly rewarding. The structures of novobiocin, methymycin, erythromycin, and carbomycin (Magnamycin), among others, were worked out. The latter three all possess a large lactone ring and have been grouped together in a family called "macrolide." Oleandomycin, pikromycin, and narbomycin apparently also belong to this family of antibiotics. The synthesis of penicillin V, the acid stable form of the antibiotic, was also achieved for the first time. The synthesis of natural, acid labile penicillins has baffled chemists for almost 15 years.

In steroids, several new and more potent glucocorticoids have emerged, most of which involve microbiological as well as chemical steps. The American Cyanamid Co. has produced 16α-hydroxy-9α-fluoroprednisolone (Orion); The Upjohn Co., 6α-methylprednisolone (Medrol); E. R. Squibb & Sons, 21-fluoro derivative of 9α-fluoroprednisolone; and both Chas. Pfizer & Co. and the Schering Corp. have synthesized 6-dehydroprednisolone. The impact of these new hormones on the glucocorticoid market, now dominated by prednisolone and hydrocortisone, remains to be seen. Much will depend on their clinical evaluation which is now in progress.

Two new steroids will compete with testosterone in its dual role as an androgenic and anabolic agent. The Upjohn Co., using a combination of microbiological and chemical steps, has synthesized a powerful androgen, 11 β-hydroxy-9α-fluoro-17α-methyltestosterone (Halotestin) and G. D. Searle & Co. has synthesized 17α-ethyl-19-nortestosterone (Nilevar), an anabolic agent with little androgenic effect.

More organisms useful in preparing the important 1-dehydro steroids such as prednisolone have been described. Chas. Pfizer & Co. has been granted the first U. S. patent on a microbiological procedure to prepare such compounds. Species of Protaminobacter were used. Along with these antibiotic and steroid discov-



*Abstracted from "Industrial and Engineering Chemistry," Vol. 49, p. 1491 1957.

eries, commercial production of L-lysine and gibberellin has been announced.

Future prospect for fermentation still lies in finding the proper combination of medium and microorganisms for producing a compound not readily made by chemical synthesis, but for which there is a demand.

Recently, microorganisms have been used commercially to add hydroxyl or ketone groups, remove side chains, and control molecular size of polymers. Fermentation can also be used to hydrogenate, epoxidize, enlarge rings, and oxidize hydroxyl groups to ketone groups. In the future, therefore, fermentation will probably be used increasingly as a complement to chemical processes for obtaining more economical operation.

Excluding numerous new potential antibiotics and anticarcinogenic or anti-viral agents, products such as glycerol, D-arabitol, fructose, carotene and carotenoids, fats, and enzymes, are undergoing commercial development. Research is also being done on sulfur from wastes, fatlike saponifiable materials from hydrocarbons, mixtures of amino acids, bio-synthesis of natural rubber, production of feeds and growth factors, and materials for microbial control of insects, plant diseases, and food preservation.

Plant Expansion and Production

Foreign expansion in fermentation continues rapidly, but in this country it has been small and limited to increased antibiotic demand and new commercial processes.

Eli Lilly and Co. plans to increase its fermentation capacity 50 per cent by installing $2,000,000 worth of facilities at the plant in Lafayette, Ind. Eli Lilly Compania de Mexico also expects to complete in the near future, a Mexican plant which will manufacture most of the pharmaceuticals it has been offering in the Mexican market.

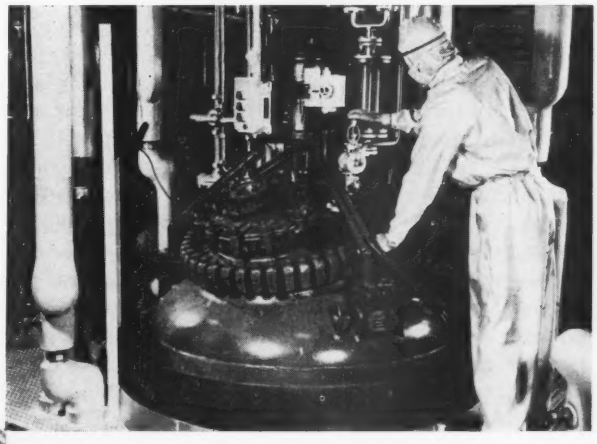
Abbott Laboratories, Ltd. is expanding pharmaceutical production at Mount Royal, Quebec, with a $100,000 addition to its present facilities. Abbott has also completely rebuilt its plant at Cali, Colombia, which was leveled some time ago by an ammunition explosion. Also, it has broken ground for a large plant on the outskirts of Buenos Aires, which should be ready by 1958.

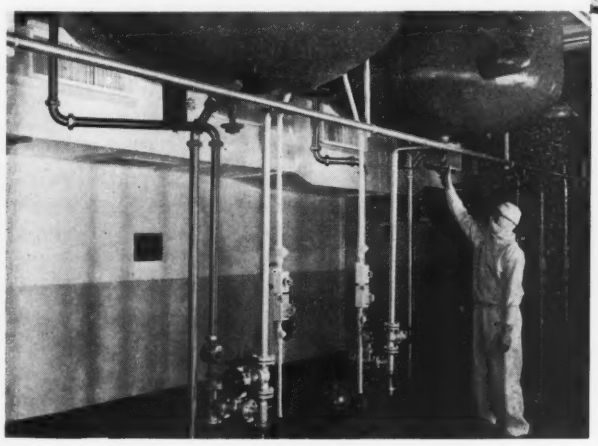
Lederle Laboratories is currently adding a semi-works plant to its present pilot plant, which will be completed in early 1957. Laboratories Lederle Mexico, S. A. expects to build a Mexican plant to manufacture most of the pharmaceuticals such as Aureomycin and Achromycin. In Brazil, another Lederle project between Sao Paulo and Rio de Janeiro will soon make Achromycin and Aureomycin.

U. S. Production and Sales of Some Fermentation Products*

Fermentation Product	Year	Production, Lb.	Sales, Lb.	Value
Penicillin and salts	1954	631,000	427,000	$ 53,030,000
	1955	455,000	445,000	43,980,000
Streptomycin	1954	141,000	75,000	5,497,000
	1955	154,000	99,000	5,127,000
Dihydrostreptomycin	1954	446,000	286,000	19,476,000
	1955	369,000	332,000	16,318,000
Neomycin and salts	1954	15,000	9,000	4,563,000
	1955	15,000	11,000	5,222,000
All others including broad spectrum antibiotics	1954	597,000	461,000	156,278,000
	1955	579,000	480,000	171,745,000
Antibiotics for feed supplements	1954	479,000	562,000	25,871,000
	1955	520,000	553,000	26,105,000
Total antibiotics for human and veterinary use	1954	1,837,000	1,263,000	240,128,000
	1955	1,572,000	1,367,000	242,372,000
Riboflavin for human, animal, and poultry use	1954	278,000	187,000	6,100,000
	1955	136,000	95,000	3,349,000
Vitamin B_{12}	1954	422	292	18,894,000
	1955	488	357	20,614,000

*U. S. Tariff Commission, Washington, D. C.





Ogden Corp. has acquired control of Syntex, S. A. of Mexico City, and its affiliated companies. Present plans call for expansion in the near future. Merck & Co., Inc. commenced operations in cortisone and antibiotics at their new Argentine plant in June 1956.

Parke, Davis and Co. has announced a $1,500,000 expansion program which will more than double pharmaceutical facilities in Brazil. Construction will be completed in 15 months.

Chas. Pfizer & Co. will build on a 30-acre site at Latina, some 40 miles southeast of Rome, a new plant for pharmaceuticals, veterinary drugs, and animal feed supplements. Construction was completed in the spring

(*Continued on page 537*)

The Biology

Fundamental knowledge surveyed in oustanding series of scientific papers at London conference

By MURRAY BERDICK, Ph.D. and AUDREY LANGDON
EVANS RESEARCH AND DEVELOPMENT CORPORATION, NEW YORK 17, N.Y.
PUBLIC RELATIONS CONSULTANT

The International Symposium on "The Biology of Hair Growth" was planned by its sponsors to be a summary of present fundamental knowledge about hair. As such the symposium in London this summer was a distinguished successor to the 1955 conference on hair at the New York Academy of Sciences. The planning of a new exchange of fundamental knowledge originated with Professor William Montagna of Brown University and Dr. Robert H. Marriott of County Laboratories, Ltd. The financial support of County Laboratories made the scientific meeting a reality. Under the sponsorship of the British Society for Research on Ageing the Symposium took place at the Royal College of Surgeons on August 7, 8, and 9. About 300 biologists, chemists, biochemists, and physicians from 15 countries attended, including a large delegation from the U.S. Society of Cosmetic Chemists.

As a scientific event the symposium was an outstanding success. The contributions of distinguished scientists from several disciplines made up an important advance in fundamental knowledge about hair and its growth. The papers maintained a high scientific level and the illustrative material was dazzling. Particularly notable were the histochemical slides shown by O. Braun-Falco, the electron micrographs by E. H. Mercer and M.S.C. Birbeck, the color photographs of large-scale models by E. Van Scott, and the photographs by Melvin P. Mohn. When the complete proceedings of the symposium are published by Academic Press late in 1958 these illustrations should prove to be extremely valuable. Other notable features of the symposium were the outstanding and enthusiastic chairmanship of Montagna, and the vigorous presentation by some speakers, especially Durward.

In opening the Symposium on "The Biology of Hair Growth," Dr. Stephen Rothman of the University of Chicago described the hair as a perfect microcosm The study of the hair had attracted scientists since the time of Aristotle and now claimed the attention of a heterogeneous group ranging from anthropologists to research workers in the fur and textile industries. Pointing out that knowledge on hair helped scientists to penetrate deeper into the foundation of nature, Dr. Rothman concluded, "While we know now that hair doesn't make us stronger, research on hair makes all of us healthier."

In a spectacular presentation, employing large scale models and color photomicrography, Eugene Van Scott of the National Institute of Health, Bethesda, Maryland discussed *The Anatomy of the Hair Follicle.* He constructed his models, 75 times life size, by taking successive sections through the entire follicle system, staining every tenth section, then reconstructing the hair follicle and its attendant sebaceous glands in three dimensions. He mentioned that straight head hair tends to be circular in cross-section, whereas naturally curly hair tends to be more oval or rectangular, and has a longitudinal twist. Male beard hair shows some differences from scalp hair in shape, and it tends to emerge from the surface singly rather than in groups. The most important difference is that beard hair has a more highly developed sebaceous system, with individual channels from the glands to the surface. The sebum emerges at the surface separately from the follicle, but adjacent to it. The beard hair is not bathed in sebum while it is in the follicle. On ageing, the activity of the entire follicle system goes down. There is a rapid decline in sebaceous activity in females after age 40. This regression does not occur in males until a much later age.

In a comprehensive presentation on *The Histology of the Hair Follicle,* Chairman William Montagna discussed in considerable detail the cyclical pattern of hair growth through alternating active and quiescent stages. After reviewing the generally known features of this cyclical growth, Montagna went on to show two outstanding groups of pictures which demonstrated by elegant techniques the pattern of the blood vessels surrounding the human hair follicle, and the network of nerves which is part of the follicle system. In both instances, he showed the collapse of the networks during the quiescent stage.

O. Braun-Falco of Gutenberg University, Germany aroused the symposium's admiration by his presenta-

# of Hair Growth

tion *The Histochemistry of the Hair Follicle*. Illustrating his findings with a series of spectacularly beautiful slides, Braun-Falco demonstrated how histochemical investigations had opened new areas of knowledge about the chemistry and biochemistry of the hair. He showed the locale of every chemical species known to be present in the hair bulb and follicle. His observations stressed metals, carbohydrates, lipids, free amino acids, nucleic acids, and enzymes. He noted that enzymes were difficult to interpret because little is known about their relative importance in the growth of hair. He discussed the location of sulfhydryl groups and disulfide links and their significance in keratinazation. Braun-Falco's studies pointed to the importance of sulfated mucopolysaccharides, probably as a sulfur carrier for keratin formation, Chairman Montagna commented.

Elegant scientific procedures also marked the paper on *Electron Microscopy of the Hair Follicle* by E. H. Mercer of Chester Beatty Research Institute, London. Mercer's superb electron microscope slides revealed chemical differences within the structure of the hair fiber. Cells in the fibers were low in sulfur but were surrounded by membranes that were higher in sulfur content and were chemically resistant. The epicuticle (the tubular membrane covering the whole fiber on the outside) was even more resistant. He found amorphous keratin was formed lower in the follicle, then crystallized into long, narrow, and oriented fibrous cells. He ascribed improvements in his latest pictures to the use of an epoxy resin for embedding specimens.

In the last paper of the very full first day's session, Gedeon Matoltsy of the Rockefeller Institute for Medical Research, New York, discussed *The Chemistry of Keratinization*. He described keratinization as a specific differentiation process. He listed chemical differences among keratins, and discussed the possible chemical nature of cross-links in the molecular structure. He presented extensive experimental results of studies of the keratin of the skin. He described the grooved nature of thick skin as a direct result of orientation of the keratin. In his work, he had fractionated cornified epithelium and studied the fractions by electrophoresis, dialysis, chromatography, sedimentation, and solubilization.

To start off the second day, Mercer outlined a general scheme for *The Biosynthesis of Fibers*. In the primary synthesis step, micromolecules were converted to precursor macromolecules. These, in turn, were converted to fibrillar aggregates by fibrinogenesis. The last stage, designated "stabilization," converted the fibrillar aggregate to a stabilized aggregate. He illustrated a number of possible modes of aggregation, and said that fibrinogenesis may be an unfolding process, or may be an aggregation process. He expects electron microscopy to settle the question of the method of fibrinogenesis. Silk was cited as an example of one

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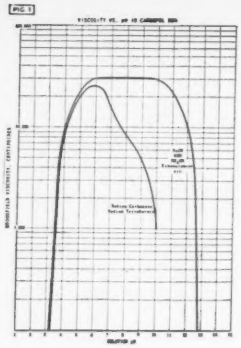
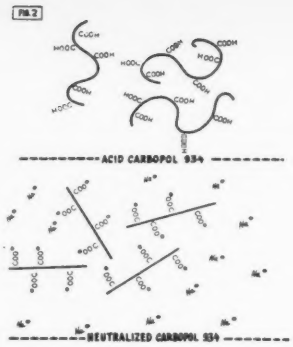
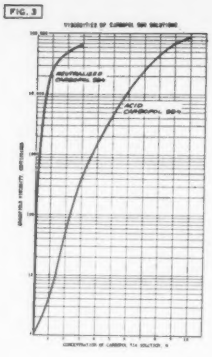
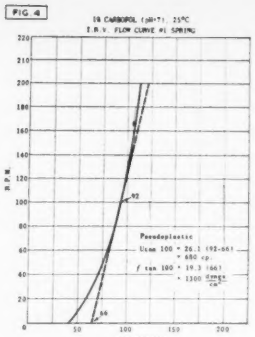








a NEW Water Soluble POLYMER for Cosmetic Compounding*

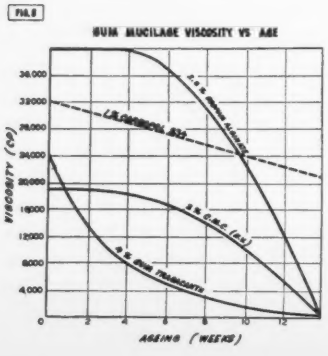
By CHARLES A. DITTMAR
B. F. GOODRICH CHEMICAL COMPANY, CLEVELAND 15, OHIO

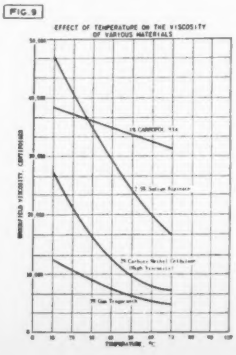
Several years ago the B. F. Goodrich Chemical Company became interested in synthesizing a water soluble gum which would be an improvement in certain properties over some of the natural gums. This problem was presented to the Research Department. The product of their efforts was a synthetic hydrophilic colloid which we now call Carbopol 934 and can broadly be described as a carboxy vinyl polymer. It is a white fluffy powder. When 1 per cent of this powder is dissolved in water it forms an acid solution with a pH of 3. The solution has a viscosity of about 4 cps. and is very turbid. When this solution is titrated with a strong base such as sodium hydroxide the viscosity will rise very rapidly. As can be seen in Figure 1 for a 1.0 per cent solution when the pH has gone up to 4, the solution has a viscosity of 10,000 cps. At a pH of 6 the viscosity has reached 30,000 cps. and here it levels out. Further titration will bring about no change in viscosity until the pH of 10. At this point further increase in pH causes a marked decrease of viscosity. At a pH of 12 the viscosity has dropped to 10,000 cps. and before pH 13 it has gone back to a watery consistency. These measurements of viscosity were made with a Brookfield Rotational Viscometer Model MV at 20 rpm with the lowest number spindle yielding a scale reading. This method of measuring viscosity will apply to all the measurements given in this paper unless specifically stated otherwise.

Thickening Mechanism

Carbopol 934 can be described as an extremely high molecular weight polymer which contains a large number of carboxyl groups along the polymer chain. It thickens through two mechanisms. The primary mech-

*Presented at the May 1957 meeting of the Society of Cosmetic Chemists





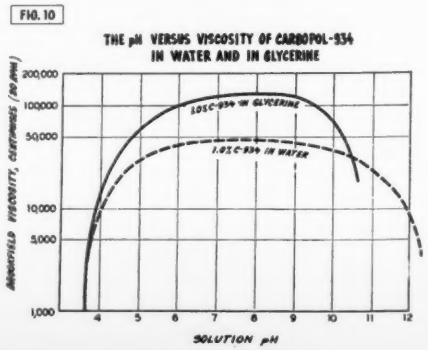


FIG. 5

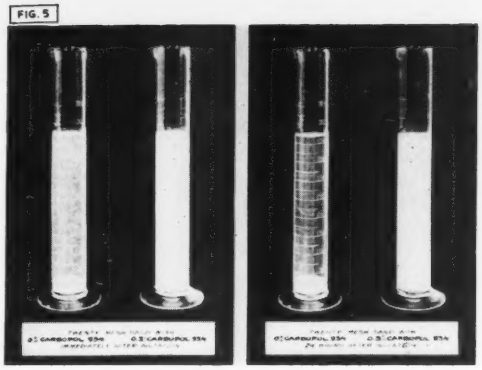


FIG. 6

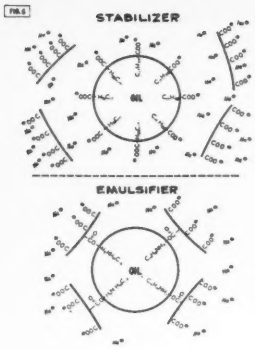
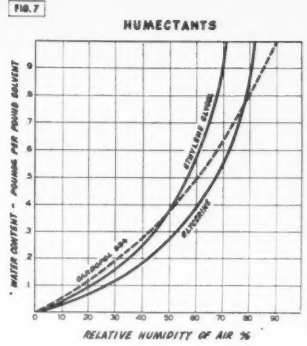


FIG. 7



anism can be illustrated by Figure 2. In the acid condition the hydrogen atom has only slight tendency to ionize and there is little charge along the polymer chain. The polymer in this condition is flexible, however, as a base is added to the system a salt of the acid polymer is formed. In this case we will assume sodium hydroxide as the neutralizing base, so the sodium replaces the hydrogen. This metal atom now ionizes freely leaving behind a negatively charged group. As adjacent groupings are thus ionized and become charged there is a repulsion force between them due to the like charge. This causes the previously flexible polymer chain to become stiff and rigid and thereby effects thickening of the water. A secondary and far less pronounced thickening effect is obtained by solvation or orientation of water molecules along the polymer chain. This is the mechanism by which most of the common gums derive their thickening action. In Carbopol this action is far less than the thickening caused by the electronic repulsion of negatively charged groups. If we look at Figure 3 showing the viscosity of unneutralized Carbopol 934 solution we can somewhat isolate the effect of orientation of water molecules. Here a 1 per cent solution has only a viscosity of 4 cps. as compared with 30,000 cps. for the neutralized Carbopol. At 3 per cent the unneutralized Carbopol has a viscosity of 400 cps., while the neutralized Carbopol has a viscosity of 50,000 cps. You have undoubtedly noticed the loss of viscosity beyond a pH of 10 to 11. This loss in viscosity is caused by an excess of cations which begin to surround and therefore screen the negative charges on the polymer chain and thus reduce the repulsion effect between adjacent groupings. This not only results in the loss of viscosity at high pH but also makes mucilages of Carbopol 934 very susceptible to superfluous cations which are introduced into the system. We have stated previously that any base may be used to neutralize Carbopol 934. If certain basic salts are used such as sodium carbonate, a very narrow viscosity plateau results as seen in Figure 1 due to the introduction into the system of an excess of metal ions at the higher pH ranges.

Rheology

The viscosity of Carbopol 934 is such that a change in spindle speed or rate of shear has a pronounced effect upon the value in centipoises measured with the Brookfield Viscometer. With any given spindle of the Brookfield Viscometer the viscosity practically doubles when the speed is halved. To get a true picture of the viscosity, mucilages must be measured at various rates of shear. The Interchemical Rotational Viscometer is one such instrument which measures viscosity at varying shear rates. This machine consists of a cup which holds material being tested and a bob which is connected to a torsion spring. The bob is immersed in the cup which is rotated at varying speeds and the drag on the bob causes a deflection on the torsion spring. By plotting the rate of shear against the spring deflection it is possible to obtain a picture of the flow properties. From this diagram such as the one shown in Figure 4 the viscosity is proportional to the inverse slope of the downward curve. Since this is not a straight line it is taken as the tangent to the curve at any given rate of shear. The intersection of this tangent with the abscissa defines the yield value. Both viscosity and yield are calculated by multiplying by a constant for the spring on the bob. Thixotropy is determined by the divergence of the up and down curves.

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FIG. 11

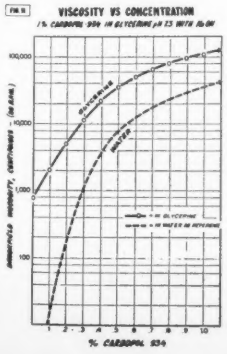


FIG. 12

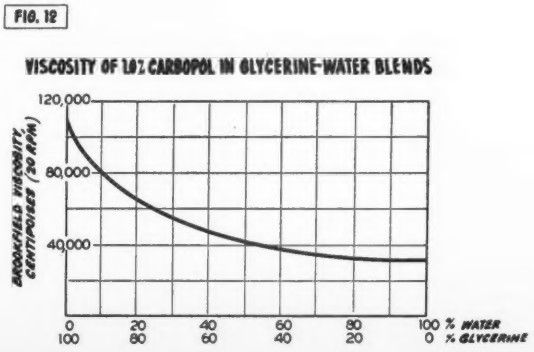
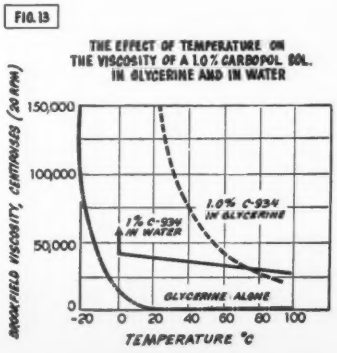


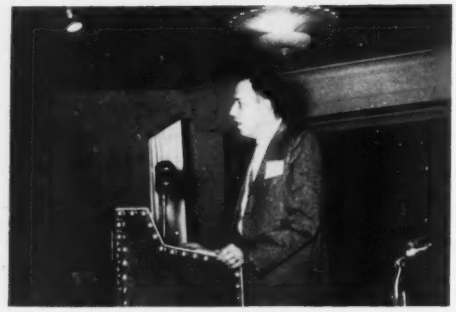
FIG. 13


THE EFFECT OF TEMPERATURE ON THE VISCOSITY OF A 1.0% CARBOPOL 934 IN GLYCERINE AND IN WATER
BROOKFIELD VISCOSITY, CENTIPOISES (20 R.P.M.)
150,000
100,000
50,000
1.0% C-934 IN GLYCERINE
1% C-934 IN WATER
GLYCERINE ALONE
TEMPERATURE °C

Society of Cosmetic Chemists Seminar 1957

Dr. Joseph Kalish of DRUG AND COSMETIC INDUSTRY, organized the Seminar.

Sabbat J. Strianse, President of the Society, opens the Seminar.



Dr. Norman B. Kanof speaks on decreasing skin pigmentation.

Speakers at the morning session and the Chairman of the Seminar.

About 200 registrants attended the Fourth Seminar of the Society of Cosmetic Chemists held at the Edgewater Beach Hotel in Chicago on September 19 and 20. The Seminar was held in conjunction with the celebration of the Tenth Anniversary of the founding of the Chicago Chapter. At the Thursday evening dinner, the occasion was opened by the National President Sabbat J. Strianse who introduced Gustav Carsch, Chairman of the Chicago Chapter. In ten years the Chapter has almost quadrupled in size and the large attendance at the Seminar reflected the professional interest of cosmetic chemists in the Chicago area. The cocktail hour preceding the dinner was also well attended. Dr. Otto Eisenschiml of Scientific Oil Compounding Co. was the speaker of the evening.

The program for the Seminar was organized by Joseph Kalish, of "Drug and Cosmetic Industry" magazine and consisted of three sessions—"Biological Aspects of Skin and Hair Pigmentation," "Laboratory Methods for Product Testing" and "Microscopic Methods."

The Thursday Morning session was devoted to **Biological Aspects of Skin Pigmentation,** the first paper being presented by Allan L. Lorincz of the Section of Dermatology, Department of Medicine, University of Chicago on *Skin and Hair Pigmentation.* The paper summarized in remarkably clear manner the present state of knowledge of the subject and provided basic background for other papers in the session. Five colored substances are responsible for the color of skin: melanin, hemoglobin, oxyhemoglobin, carotene

Dr. S. Rothman summarizes the session and answers questions.

At the dinner: seated, Seymour Kornblau, S. J. Strianse, Dr. Otto Eisenschiml, Gustav Carsch; standing, Gabriel Barnett, Dr. Walter A. Taylor, James H. Baker, Robert A. Kramer, Dr. Joseph Kalish and Donald Laiderman.

and melanoid and the final color depends upon the distribution of these pigments and the local thickness of the skin layer. Melanin is the characteristic pigment of the skin and hair and is formed in the skin around certain granules in specialized cells called melanocytes. Melanin is formed by oxidation of tyrosine with the assistance of the enzyme tyrosinase. The rate of melanin formation is regulated by heat and chemical groups which bind and partially inactivate the copper of tyrosinase. Pigmentation is stimulated by sunshine, ionizing radiations and inflammatory processes which tend to oxidize or otherwise remove the enzyme inhibitors while pigmentation is retarded or reduced by inhibition of tyrosinase activity. Melanin, once formed, is lost from the skin by progression upward through the epidermis, and may also move downward into the lymphatic system. The normal rate of loss from the epidermis is very low. Various hormones and vitamins and other nutritional factors have an influence on increased and decreased pigmentation. Darkening by sunlight consists of an initial darkening by longer ultraviolet light rays of preformed, partially reduced melanin and this process reaches a maximum in one hour after exposure. Several days later, melanin granules migrate to the surface of the epidermis and new formation of melanin begins. Shorter light wavelengths producing erythema are required for melanin formation. Mention was also made of the recent announcement by Fitzpatrick that the pigment in red hair is different from melanin and is based upon tryptophane.

S. William Becker, Jr. of the University of Illinois School of Medicine discussed *Means of Increasing Skin Pigmentation*, with special reference to the action of 8-methoxypsoralen (8-MOP). Pigment formation must go on for some time before a large amount of melanin is contained in the skin and there is a limit to the amount of melanin that can be produced, regardless of the stimulation. Administration of 8-MOP seems to alter the metabolism of cells so that a stratum lucidum is formed. Pigment formation and the inflammatory response to irradiation are both increased. Bergapten from bergamot is 5-MOP and does increase pigment formation, but to such an extent that melanocytes are destroyed and melanin goes into the cutis. After 8-MOP, the stratum corneum is very adherent and does not peel and melanin is retained in the melanocytes and the horny layer. "It may be possible to find an anti-inflammatory chemical which will prevent nonspecific inflammation from sunlight while allowing

(*Continued on page 551*)

Dr. S. William Becker, Jr. talks about increasing skin pigmentation.

Dr. Donald H. Powers and W. G. Fredell submit to questions from the floor.

Dr. Allan L. Lorincz summarizes skin and hair pigmentation.

Liquid LANOLIN

By E. S. LOWER & S. CRESSEY
CRODA INCORPORATED. (N. Y.)

Although ordinary lanolin has long enjoyed popularity as an ingredient for cosmetic and pharmaceutical preparations, it unfortunately causes 'stickiness' or 'drag' in certain formulations. In view of its many beneficial properties these disadvantages have often been tolerated but in 1949 Croda Limited (Gt. Britain) began intensive research designed to produce a lanolin derivative which would retain all the skin-nourishing characteristics of normal lanolin, yet be capable of smooth and easy application. The obvious answer was a liquid derivative since this would have the additional advantage of being easily incorporated into lotion type products, many of which had hitherto contained only token quantities of lanolin. Our experimental work resulted in liquid lanolin being placed on the British and American markets in 1950.

Composition and Analysis

It should be emphasized at this stage that liquid lanolin is a genuine extract of lanolin and contains no diluent, additives or extenders; it is actually composed of neutral, liquid, lanolin esters.

Some idea of its viscosity as compared to that of normal lanolin may be gained from Fig. 1, the photograph being taken at room temp. The second photograph (Fig. 2) which is also taken at room temp. demonstrates the clarity of the product; this being an important point in considering ingredients for 'crystal clear' cosmetics.

A typical analysis of liquid lanolin is given below, and for comparison purposes, an analysis of a good quality normal lanolin is also shown.

	LIQUID LANOLIN	LANOLIN
CLOUD POINT	= 17 — 18°C	42 — 46
SOLIDIFYING POINT	= 3.4°C	36 — 40°C (M.P.)
ACIDITY (AS OLEIC)	= 1.09%	0.15 — 0.5
IODINE VALUE (WISS)	= 25.73	18 — 32
ASH CONTENT	= 0.046%	<0.15
EMULSIFICATION VALUE (TROUTER METHOD) (4)	= 25 cc	19 cc approx.
UNSAPONIFIABLE MATTER	= 58.82%	46 — 54%
CHOLESTEROL CONTENT OF UNSAPONIFIABLE MATTER	= 22.41%	18 — 32%
VOLATILE MATTER @100°C	= 0.58	0.5%

Liquid lanolin is insoluble in acetone, ethyl alcohol, water, glycerine and glycols but soluble in hydrocarbons and aromatic solvents and fatty esters e.g. isopropyl myristate.

Functions

The functions of liquid lanolin are summed up below:

1) It acts as a skin softener and emollient, being particularly useful for dry or very sensitive skin. This property has led to widespread use in baby preparations.

2) It serves as a liquid source of cholesterol.

3) It serves as a water-in-oil emulsifier (present indications are that its action is more pronounced than that of lanolin itself) and as an auxiliary emulsifier for o/w emulsions.

4) It acts as a wetting and spreading agent in non-aqueous media.

5) It acts as a solvent and carrier for many lipoid

	Hexachloraphene	1 g
	Perfume oil	1 g
d)	**Cleansing lotion:**	
	White oil	30%
	Liquid lanolin	6%
	Hydroxyquinolins	0.05%
	Woolwax alcohols	1.0%
	Water	to 100

Liquid Make-Up

The sweating of oil droplets is also a common fault of liquid make-up bases. A liquid cream, which suitably pigmented could be used as liquid make up may be made up as follows:

Isopropyl myristate	34.0
Liquid lanolin	6.0
Stearic acid triple pressed	3.0
Trieth lauryl alcohol sulphate	1.0
Perfume oil	0.3
Preservative	0.02
Distilled water	55.68
	100.00

Ointment bases

Simple bases prepared by shaking liquid lanolin

with water have been prepared using the following proportions:

Liquid Lanolin % weight	Water % weight
50	20
60	40
40	60

Smooth water-in-oil emulsions are formed and these have shown a stable shelf-life of at least 6 months.

Technical Uses

Liquid lanolin is worth consideration for water-dispersed type printing inks, pressure sensitive adhesive tapes, as a plasticiser and as an 'oiliness' agent.

Storage Properties

(*Continued on page 550*)

and similar substances.

6) It serves as a dyestuff solubilizer.

Liquid lanolin can wholly replace ordinary lanolin in many formulations and is particularly indicated, where the lanolin has previously caused 'stickiness'. It should be emphasized that liquid lanolin is not intended as a replacement for normal lanolin in all formulations but is intended to make its beneficial properties available to a wider range of products.

All usual cosmetic ingredients are compatible with liquid lanolin and it is worth bearing in mind that this derivative may be particularly useful in preparations to be compounded at room temperatures, since it needs no heat to melt it.

Applications

As already mentioned, liquid lanolin has gained favor as an ingredient of baby preparations by virtue of its emollient powers.

It can actually be used, without any additives whatsoever, to sooth chafed or tender young skin since it is easily applied and quickly absorbed. A selection of formulas for baby preparations is given below:

Baby oils		
a)	Mineral oil	90
	Isopropyl myristate	3
	Liquid lanolin	3
	Etheyl stearate	4
	Perfume & Preservative	0.5
b)	Mineral oil	75
	Isopropyl palmitate	21.9
	Liquid lanolin	3
	Hexachlorophene	0.1
	Perfume and preservative	0.5
c)	Vitamin baby oil[1]	
	Olive oil	300 g
	Isopropyl Palmitate	200 g
	Paraffin oil, (non U. V. fluorescent)	200 g
	Avocado oil	100 g
	Cetrol V	100 g
	Carrot oil, vitamin A enriched	50 g
	Liquid lanolin	28 g
	Silicone oil 500 C.S.	20 g

Royal Jelly

BY R. B. WILLSON R. B. WILLSON, INC., NEW YORK 17, N. Y.

For several years now, the beekeeping world has been living in a state of confusion about Royal Jelly, confusion brought about by claims made for its properties. At the same time we have been hearing from many sides that these claims are unsubstantiated and therefore unjustified. During this period a wholesome doubt about Royal Jelly has been consistently maintained. The meagre evidence based on a myriad of instances where Royal Jelly had proved helpful to human beings in one way or another, made us hopeful, but not positive. The pronouncement of the personal physician of his Holiness, Pope Pius XII, Dr. Ricardo Galleazzie-Lisi, in April 1956, that he attributed the Holy Father's recovery from a long weakening illness in large measure to his taking of Royal Jelly, was encouraging. So was the announcement of the eighty year old President of Chile, who in March 1957, stated for publication that it was the Royal Jelly he was taking which made it possible for him to develop such tremendous vigor for his most burdensome job.

All during this period, however, we in the beekeeping world have been conscious of the fact that to men of science, including of course men of the medical profession, such evidence is valueless. Only the methods employed by what is known as "clinical research" would prove anything, and quite properly so.

Well, the whole wonderful story can now be told. We have the results of clinical research, and we now know, and can be positive, that Royal Jelly is, and has been proved by science to be, a great boon to mankind!

In January and February 1955, our articles entitled "Royal Jelly: A Review" were published. In them we set forth, with references to published works, what scientists had learned about Royal Jelly, pointing out that it is a creamy-yellow glandular secretion of pasty consistency of the 3 to 10 day old adult female bees called nurse bees, and that though fed to all honey bee larvae the first few days of their lives, it is fed to queen bees throughout their lives from beginning to end with the remarkable results which follow: a perfect and beautiful female, living ten to twenty times longer than other bees, and having the fantastic ability to lay her own weight in eggs in a single day, a metabolic feat that has long intrigued science.

We reviewed the results of chemical analyses that showed Royal Jelly to be about 66 per cent water; 12½ per cent carbohydrates; 12½ per cent protein; 5½ per cent fat and the balance undetermined matter.

We reported painstaking work which had shown that Royal Jelly is rich in the vitamin B complex, especially in pantothenic acid.

We cited the published work which established that Royal Jelly has:

1) A demonstrable sex factor
2) A demonstrable and strong bactericidal factor
3) A demonstrable longevity factor.

All of these facts are fine as far as they go, but what about the application to man? All the experimental work had been done on other insects, or mice and rats. Would these favorable results apply to man?

At that time we were not aware of developments in Europe where a number of workers in certain universities, laboratories and hospitals were hard at work discovering the facts about the application of this product to man. In our country with the exception of one piece of basic work, research in Royal Jelly had been allowed to die. That exception was done at Cornell University where a Canadian, Maurice Vernon Smith, received his Ph.D. degree this spring under Dr. E. J. Dyce, on a soon-to-be-published thesis on Royal Jelly.

Fortunately interest was keenly alive abroad, so from the results of European research first let us tell about the contributions of Dr. Remy Chauvin who is the Director of the French Government Apicultural Experiment Station at Bures-sur-Yvette.

Dr. Chauvin is the author or co-author of six sci-

entific works on Royal Jelly. He has experimented and published papers on the collection[1] and storing of Royal Jelly and its physical properties, its biochemical[2] properties, a study of its gross[3] and microscopic properties and characteristics, its action when injected into mammals,[4] a biological[5] and histologic study of the same showing subcutaneous injections of Royal Jelly stimulated body metabolism and had a moderate effect on growth, and the effect of Royal Jelly on the metabolism[6] of the liver.

Dr. Chauvin and his associates experimented with Royal Jelly in injectable form, which he found became effective only after the fifth to the eighth day when kept in the ice box at around freezing temperature. He states that it retains its potency for about a week but that this potency can be extended and studies along these lines are being conducted.

This work under Dr. Chauvin's direction is remarkable in that it is both basic and greatly revealing to us in our quest for knowledge on Royal Jelly. From it we begin to learn that when taken by human beings it effects the glands, a belief held for a long time by those other pioneers in Royal Jelly, Don Arturo Wulfrath and Dr. Hans Speck of Cuernavaca, Mexico. He points out that it is most effective in the ills of aging, in neuro-psychoses and in malnutrition. He is at work trying to isolate the active property that stimulates the glands.

Another associate, C. Goillot, has published a paper[7] on the physical characteristics of Royal Jelly and he points out that Royal Jelly lends itself to physical and chemical testing for purity and the degree of sanitation used in its collection by beekeepers. In this paper he gives methods of determining its adulteration.

In a recent article,[8] Dr. Chauvin reports on the recent work of Dr. H. Destrem, of the University of Bordeaux, who published[9] in the Revue Francaise Gerontologie in 1956, the results of Clinical Research carried on by him with 134 people, 70 to 75 years of age, emaciated and senile, and deprived of physical strength. They were treated with intramuscular injections of 20 mgs. of lyophilized Royal Jelly, repeating these treatments every other day. Results became apparent usually after the sixth injection—sometimes sooner. There was a return of appetite, causing the patients to put on weight and at the same time producing a state of euphoria, and, quoting Dr. Chauvin: "this being a very decided characteristic of Royal Jelly." Also to be noted was a rise in the blood pressure in those suffering from low blood pressure, but no increase in those suffering from high blood pressure.

Dr. Chauvin then gives some details on four of Dr. Destrem's cases outside the 70-75 year old range:

A woman 84 years old has been generally active but had been rendered mentally deficient and nervous, and had developed low blood pressure as a result of a severe and long drawn-out attack of influenza. After the first injections of Royal Jelly there was noticeable improvement in appetite, a lowering of nervous tension, and a rise in blood pressure. After six more injections she left her bed, gaining more weight and again became interested in her daily routine. After eight months improvement was still in effect.

A man 68 years old had dietary deficiency, nervousness, fainting spells, complete debility. After the fourth injection improvement was noticeable. After twelve injections he seemed to feel quite normal, regained his appetite and was gaining weight.

A woman 50 years old, whom menopause 5 years earlier had left unbalanced, was suffering from nervousness, continual headaches, spasms of the throat, insomnia, backaches, fainting spells and a desire to commit suicide. After only six injections she forgot her ideas of suicide, became interested in her daily work, had no more difficulty in sleeping, and led a normal sex life. Her nervous tension disappeared.

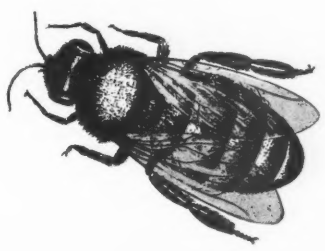
A woman 62 years old was suffering from emaciation and extreme debility, as well as nervousness induced by a ganglionic infection which had not responded to antibiotics. The first few injections brought about a significant gain in weight of over three pounds. In four months, after a third series of treatments, the bacterial infection was gone and she had experienced general improvement.

According to Dr. Destrem, "Royal Jelly is a therapeutic agent, its use being of the greatest possible interest to geriatrics."

Dr. Destrem, according to Dr. Chauvin, also used Royal Jelly on young people suffering from neuropsychoses, some of whom had ideas of suicide, others with obsessions, melancholia and nervous tension. Many of these had already received other therapeutic treatments without much success. The results he obtained were immediate and quite spectacular, the patients gaining weight, sleeping normally, regaining their usual health. Taken orally, the results seemed almost as satisfactory as by injection, although, he states, this method of administration is used more in the treating of old people.

Dr. Chauvin goes on to report on the work of Dr. P. Decourt,[10] published in 1956, in the French Journal "Revue Pathologie et Generale Physiologie Clinique," entitled "Royal Jelly and Its Activities with the Higher Vertebrates." Dr. Decourt made experiments with humans with tablets of 15 to 25 milligrams, us-

(Continued on page 535)



Sunburn and its Control

CONCLUSION

BY EMIL G. KLARMANN,
SC.D., D.SC. (HON.) VICE-PRESIDENT AND MANAGER OF TECHNICAL SERVICES, LEHN & FINK, INC., NEW YORK, N. Y.

As emphasized before, it is not the proper purpose of a sunscreen completely to prevent the sun's ultraviolet radiation from reaching the skin; rather, it should reduce its intensity sufficiently so as to enable the skin to build up its own protection against further exposure; and this is achieved primarily by the thickening of the *stratum corneum*.

Over a period of time, a considerable number of chemicals have become known which are suitable for use as sunscreens. Their selection for any particular formulation depends upon a number of factors among which are screening efficiency, solubility (or emulsifiability), and economy. In connection with the latter point, it should be kept in mind that the factors of economy and screening efficiency are inter-related, in that more efficient sunscreens permit the use of lower concentrations which, therefore, may be more economical than the required higher concentrations of less expensive but also less effective materials[42].

The literature on sunburn prevention refers to numerous substances of which the following is a partial listing:

p-Aminobenzoic acid, its salts and its derivatives (ethyl, isobutyl, and glyceryl esters; *p*-dimethylaminobenzoic acid and esters).

Anthranilates (i.e., *o*-aminobenzoates; methyl, menthyl, phenyl, benzyl, phenylethyl, linalyl, terpinyl, and cyclohexenyl esters).

Salicylates (amyl, phenyl, benzyl, menthyl, glyceryl, 2-ethylhexyl and dipropyleneglycol esters).

Cinnamic acid derivatives (menthyl and benzyl esters; *o*-phenyl cinnamonitrile; butyl cinnamoyl pyruvate).

Dihydroxycinnamic acid derivatives (umbelliferone, methylumbelliferone, methylaceto-umbelliferone).

Trihydroxycinnamic acid derivatives (esculetin, methylesculetin, daphnetin, and the glucosides, esculin and daphnin).

Hydrocarbons (diphenylbutadiene, stilbene).

Dibenzalacetone and benzalacetophenone.

Naphtholsulfonates (sodium salts of 2-naphthol-3, 6-disulfonic and 2-naphthol-6,8-disulfonic acids).

Dihydroxy-naphthoic acid and its salts.

o- and *p*-Hydroxybiphenyldisulfonates.

Coumarin derivatives (7-hydroxy, 7-methyl, 3-phenyl).

Diazoles (2-acetyl-3-bromoindazole, phenyl benzoxazole, methyl naphthoxazole, various aryl benzothiazoles).

Quinine salts (bisulfate, sulfate, chloride, oleate, and tannate).

Quinoline derivatives (8-hydroxyquinoline salts, 2-phenylquinoline).

Uric and violuric acids.

Tannic acid and its derivatives (e.g., hexaethyl-ether).

(Butyl carbityl) (6-propyl piperonyl) ether.

Hydroquinone.

It should be mentioned in passing that isomerism

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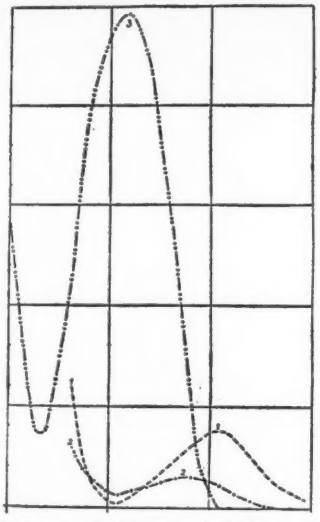


Fig. 4 Aminobenzoic Acid Isomers: 1, Ortho; 2, Meta; 3, Para

plays an important role in determining absorptive capacity for erythemal radiation. Thus, as shown in Fig. 4, the *para*-isomer of aminobenzoic acid is quite superior in this respect to both the *ortho*- and *meta*-isomers[43,44]; by contrast, *o*-hydroxybenzoic acid (salicylic acid) has a comparatively high absorption value while p-hydroxybenzoic acid has practically none.

Giese, Christensen and Jeppson[45] determined the extinction capacity for ultraviolet at 2970 Angstrom of a number of sun-screens, while Pernich and Gallagher[46] presented the transmission spectra of several groups of such chemicals; they concluded that the following substances should give evidence of the greatest protective efficiency: ethyl-*p*-dimethyl-aminobenzoate, isobutyl-*p*-aminobenzoate, coumarin (also 8-methoxycoumarin, 5,7-dihydroxy-4-methylcoumarin and 6-aminocoumarin), umbelliferone and benzylacetophenone.

Kumler[47] suggested a comparatively simple and rapid method of evaluating the relative absorption capacity of a number of sunscreens, based upon the determination of the optical density of their 0.1 per cent solutions in an 0.1 mm. silica cell at 3080 Angstrom, which is at the peak of the "sunburn curve." By reducing all readings to those of 1 per cent solutions, he obtained a series of "sunscreen indices" shown in (selective) Table 5.

Table 5
SUNSCREEN INDICES APPLYING TO 3080 ANGSTROM

Compound	Sunscreen index
Ethyl *p*-dimethylaminobenzoate	14.80
Ethyl *p*-aminobenzoate	9.60
Isobutyl *p*-aminobenzoate	9.20
p-Aminobenzoic acid	7.40
Digalloyl trioleate	2.30
Ethyl gallate	1.40
Lauryl gallate	0.85
Salicylic acid	4.30
Methyl salicylate	4.00
Salicylamide	3.90
Sodium salicylate	2.40
Salicyl aldehyde	2.20
Dipropyleneglycol salicylate	1.90
p-Aminosalicylic acid	1.90
Methyl umbelliferone	7.70
Umbelliferone acetic acid	6.00

This table indicates that the esters of *p*-aminobenzoic acid yield the most effective sunscreens; the ethyl ester of *p*-dimethyl-aminobenzoic acid appears to be more effective than either the ethyl or the isobutyl ester of p-aminobenzoic acid. In the series of salicylic acid derivatives, the free acid is superior to both the methyl

ester and the sodium salt. It should be noted, at this point, that some sunburn preventives containing derivatives of p-aminobenzoic acid tend to discolor light fabrics upon exposure to sunlight; the salicylic esters seem to be free from this drawback.

As mentioned before, one of the important requirements of a sunscreen is a high degree of resistance to change or decomposition upon exposure. A systematic investigation of this aspect was carried out by Christensen and Giese[48], by way of measuring the changes in the absorption capacity of several sunscreens following prolonged irradiation with a quartz mercury lamp, and using a filter transmitting radiation of 2800 Angstrom and longer. It was found that some sunscreens (e.g., ethyl p-aminobenzoate, menthyl anthranilate) showed an increase of absorption following such treatment, some showed a decrease (e.g., benzyl salicylate), while others showed little or no change (e.g., menthyl salicylate).

For illustrative purposes, several types of formulas are given here in order to indicate the many formulation possibilities.

Formula 1. Suntan Oil

2-Ethyl hexyl salicylate	5.0 per cent
Sesame oil	40.0
Mineral oil	55.0
Perfume, color, and antioxidant	q.s.

Formula 2. Suntan Jelly

Homomenthyl salicylate	5.0 per cent
Ceresin (65°C.)	15.0
Peanut oil	80.0
Perfume, color, and antioxidant	q.s.

Formula 3. Suntan Cream (Fatty)

Dipropyleneglycol salicylate	5.0 per cent
Lanolin, deodorized	25.0
Sesame oil	20.0
Mineral oil	20.0
Water	30.0
Perfume, color, and antioxidant	q.s.

Formula 4. Suntan Lotion (Alcoholic)

Glyceryl-p-aminobenzoate	3.0 per cent
Propyleneglycol ricinoleate	10.0
Glycerol	10.0
Alcohol	65.0
Water	12.0
Perfume and color	q.s.

Formula 5. Suntan Cream (Non-Fatty)

Part A	
Stearic Acid	20.0 per cent
Cetyl alcohol	0.6
Menthyl anthranilate	5.0
Part B	
Ammonia (26°)	1.0
Sodium hydroxide	.4
Glycerol	10.0
Water	63.0
Perfume, preservative	q.s.

Formula 6. Suntan Cream (Liquid), Type 1

Part A	
Diethyleneglycol monostearate	2.0 per cent
Stearic acid	1.5
Cetyl alcohol	0.5
Menthyl anthranilate	5.0
Part B	
Triethanolamine	1.0
Water	90.0
Perfume, preservative	q.s.

Formula 7. Suntan Cream (Liquid), Type 2

Mineral oil	25.0 per cent
Sorbitan monostearate (Arlacel 60)	4.0
Polyoxyethylene sorbitan monostearate (Tween 60)	6.0
Monoglyceryl p-aminobenzoate	3.0
Water	62.0
Perfume, preservative	q.s.

Formula 8. "Sunshade" Ointment

Calamine	15.0 per cent
Petrolatum, yellow	37.5
Lanolin	12.5
Water	35.0
Perfume, color, preservative	q.s.

Formula 9. "Quartermaster Corps" Sunburn Cream

Glyceryl monostearate	13.00 per cent
Lanolin	4.70
Propylene glycol	4.70
Titanium dioxide	2.50
Sodium lauryl sulfate	0.05
Isobutyl-p-aminobenzoate	2.00
Isopropyl myristate-(palmitate)	20.00
Water	53.05
Color, preservative	q.s.

Formula 10. Sun Cream
(N.F. IX, Not Admitted to N.F. X)

Phenyl salicylate	5.0 per cent
Ethyl p-aminobenzoate	2.0
Titanium dioxide	1.0
Neocalamine	1.0
Yellow ferric oxide	0.1
Coumarin	0.1
White wax	2.0
Triethanolamine	0.5
Stearyl alcohol	8.0
Stearic acid	2.0
Glycerol	10.0
Water, distilled	68.3
Perfume, preservative	q.s.

Formula 11. Sunburn Preventive Preparation, Cream Paste (QMC, July 10th, 1951)

Petrolatum, light amber	36.5 parts
Stearyl alcohol	3.5
Mineral oil	15.0
Sesame oil	2.0
Calcium stearate	10.0
Kaolin	30.0
Sunscreen, approved*	3 to 8
*Monoglyceryl p-aminobenzoate	3 per cent
2-Ethyl-hexyl salicylate	5
Homomenthyl salicylate	8
Digalloyl trioleate	3

Formulas 1 to 7 contain several different filtering agents frequently employed in sunburn preventive formulas, which are available commercially. Among them are menthyl and dipropyleneglycol salicylates, menthyl anthranilate, and isobutyl-*p*-aminobenzoate. In the more recent past[49], certain dialkyl aminobenzoates have been suggested which are claimed to have five to eight times the screening power of the salicylates and anthranilates, three times that of the umbelliferones, and about twice that of the nonalkylated *p*-aminobenzoates.

Formula 8 illustrates a "sunshade" type of product, i.e., a preparation which depends for its effectiveness upon the opacity (or light-scattering action) of calamine, rather than upon absorption of the ultraviolet portion of the solar spectrum. The disadvantage of this type of product derives from the need for a comparatively heavy pigment coating which imparts an unsightly appearance to the skin. Formula 9 combines the effect of a true sunscreen with that of an opaque "sunshade" (the latter by virtue of its content of titanium dioxide).

Formula 10 of the National Formulary IX also

(*Continued on page 522*)

Packaging and Selling

Packages for the Paper-Doll Set
have been designed by Donrico, Inc. for Lentheric's children's line: Tweedie Toiletries for Little Girls. To appeal to the four to eleven age group, each package has a Tweedie doll and cut out clothes. The Tweedie line consists of toilet water with atomizer spray attachment, bubble bath packets, bubble bath liquid, dusting powder, and bath soap. Shown above is Tweedie's doll house. There is also a travel package, a party box, bathroom and beach package, and a television set package.

Owens-Illinois Assures You A Complete Packaging Approach

Co-ordinated Research

Pure research into fabrication of glass, *packaging research* into processing and handling methods in customer plants, *market research* into consumer attitudes. All add up to greater packaging value.

Engineered Design

At Owens-Illinois, your package's *three* needs are taken into account: 1) Considerations of its function in the retail store, 2) its operating efficiency, and 3) its consumer utility.

The Right Container

Versatility of facilities and talents make O-I your best source of supply. In container development—beauty, utility, tradition are blended in the right proportions for your product's needs.

The Right Closure

Through long and continuing research O-I has developed the most advanced metal and plastic closures. Helping you choose the right closure is another function of O-I's packaging service.

Needed Fitments

O-I specialists are keenly aware of sales benefits derived from plastic shaker and pour-out fitments which are not "gadgets" but which increase consumer satisfaction with your product.

Merchandising Cartons

Modern cartons are developed only through systematic consideration of their opportunity to serve you in the retail store and warehouse . . . as well as on your own filling line and in transit.

Metalized closures are another part of O-I's complete packaging service

Give your salespackage this TOUCH OF GOLD ...an O-I metalized closure!

To your customers, a salespackage capped with golden color signifies a *special* product.

That's why a metalized closure—as part of a well-designed package—is a sure way to draw attention to your product . . . to express its quality . . . to compel sales action.

With all their sales value, metalized closures are but one part of Owens-Illinois' complete packaging service. This service includes virtually every type of metal or plastic closure . . . complete selection of stock containers as well as custom designs . . . label designs . . . special fitments . . . merchandising cartons.

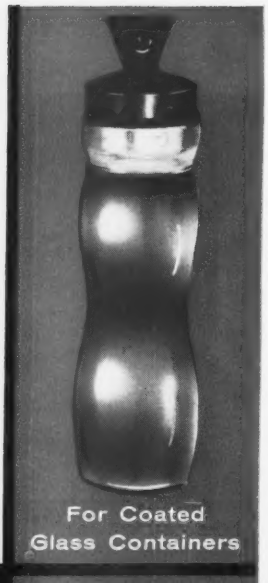
Ask your Owens-Illinois representative for complete details on metalized closures or any part of O-I's packaging service. Call him today!

METAL AND PLASTIC CLOSURES
AN (O) PRODUCT

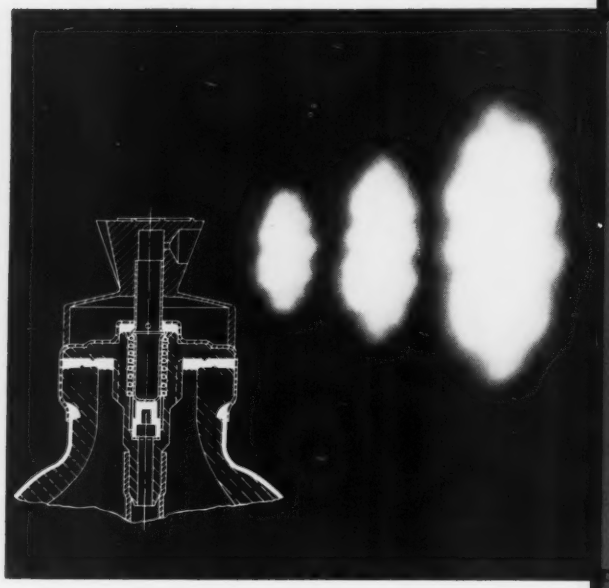
OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO

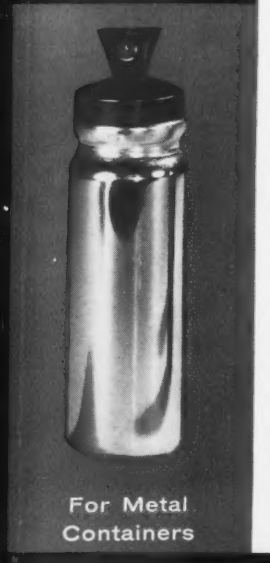
Creating New Horizons
In Cosmetic And
Pharmaceutical Packaging

RISDON METERED SPRAY AEROSOL VALVES



For Coated Glass Containers





For Metal Containers

Creative research has made the Risdon metering valve another facet of Risdon's leadership in aerosol product dispensing.

You will find it in use on exquisite containers dispensing measured amounts of many of the best known perfumes. And in the pharmaceutical field, its ability to deliver the various pre-measured dosages desired, through special applicator-actuators, is opening new aerosol product possibilities.

It is available with either standard or patented Risdon "Micro-Mist" actuators, permitting unprecedented formulation latitude.

To serve your aerosol dispensing requirements Risdon offers technical advice and assistance plus extensive research, testing and quality control facilities and a fund of successful experience in the production of valves for a wide range of products.

For further information on Risdon metered-spray or conventional spray valves for glass, metal or plastic containers, contact Risdon today.

RISDON

THE RISDON MANUFACTURING CO.

Valve Division, Naugatuck, Conn.

For Combination Glass & Metal Containers

Available with Special Applicator-Actuators For Pharmaceutical Products

RI-96

Lederle Laboratories' Rhulicream and Rhulispray are displayed vertically through use of a multi-unit carton.

PACKAGING
Health and Beauty Aids

BY A. E. MURPHY MARKETING DIRECTOR, FOLDING PAPER BOX ASSOCIATION OF AMERICA

Health and beauty aids must meet the demand for packaging that facilitates displays and speeds up consumer selection. This accelerated pace in drug merchandising is in direct ratio to increased development of self-selection in all outlets handling drug products.

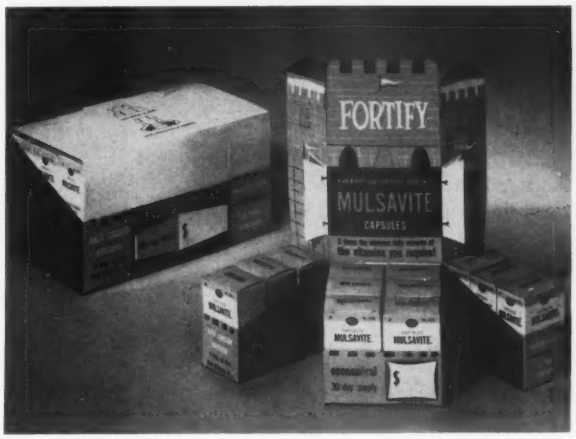
Complete self-service is now practiced in 25 per cent of all drug stores. Another 40 per cent employ some form of self-selection. The trend to open-display is heaviest in chain drug outlets, a recent survey by the Folding Paper Box Association of America shows. Chains opened 111 new self-service stores last year—16 per cent more than in 1955.

Those drug products most adaptable to self-service were the first to be accepted by supermarkets, now competing strongly for a share of the toiletries and cosmetics market. Since 1950, the supers' slice of this business has risen from 6.1 per cent to 19.1 per cent, the FPBAA study reveals. In the same period the drug-store share of toiletries and cosmetics volume fell from 37 per cent to 29.3 per cent.

Drug stores have met such competition partly by concentrating more on pharmaceuticals. In so doing, they have brought medicinals out from behind the Rx counter and into up-front displays. This move has required upgraded packaging with greater eye-appeal.

In replacing the face of the salesperson with the face of the package, folding paper boxes have proved to be by far the most effective medium for the job. The overhwelming popularity of folding cartons for performing the multitude of merchandising tasks demanded of a drug package results from their superiority in these essential areas: protection, stackability, printing, adaptability to unusual shapes, and colorful design.

Folding cartons have also been favored as the "package of choice" to derive the maximum value from these major trends in drug packaging: more related-item



Merck Sharp & Dohme's Mulsavite display was designed to appeal particularly to children and to gain space on the druggist's counter.

A cardboard sleeve bearing a special-price offer, slipped over a carton of Roger & Gallet soap, illustrates promotion through packaging.

HOW YOU CAN

PACKAGE FOR PROFIT IN 1957

In the Pharmaceutical Market...

growth aerosols point the way to volume sales

For packaging drugs and pharmaceuticals the aerosol offers some outstanding advantages: The sealed container prevents contamination of ingredients, spilling is eliminated, and rapid uniform application of medicament is possible. In addition, a fine mist can be readily formed for inhalation purposes.

Aerosol pharmaceuticals have a really bright potential for future growth. Production has grown steadily to over two and a quarter million units in 1956, and the growth rate today is such that about four and a half million units are predicted for 1957.

Du Pont's consumer survey covering burn preparations, antiseptics and bandages showed a large total market for these pharmaceutical products in all forms of packaging, but a striking lack of awareness of the aerosol. Yet where housewives *had* tried these pharmaceuticals in aerosol form, they indicated a definite preference for the aerosol method of application. Why not package your pharmaceutical product for profit in an aerosol?

Send for your free copy of Du Pont's survey report on the market for aerosol pharmaceuticals. Write E. I. du Pont de Nemours & Co. (Inc.), "Freon" Products Division 1510, Wilmington 98, Delaware.

About fifty pharmaceutical items packaged in aerosol containers are now on the market, and several more are in the development stage. These include such products as inhalants for asthma relief, burn sprays, poison-ivy sprays, and antiseptics, anesthetics and antibiotics for topical applications.

For help when you package for profit call in a custom aerosol filler

You can get help in planning for your aerosol product, and you don't need experience or expensive equipment. Just call on a custom filler. He can help in many ways—product evaluation, formulation, testing, container selection and labeling, filling, packing and shipping. When you select a filler, be sure he uses Du Pont Freon* propellents for your product. With "Freon" you get a propellent backed by the industry's most comprehensive technical and marketing services and more than 26 years of Du Pont manufacturing leadership. For names of qualified fillers near you, write to E. I. du Pont de Nemours & Co. (Inc.), FREON® Products Division 1510, Wilmington 98, Delaware.

**Freon and combinations of Freon- or F- with numerals are Du Pont's registered trademarks for its fluorinated hydrocarbon propellents.*

FREON® *propellents*

DU PONT
REG. U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING...THROUGH CHEMISTRY

packaging; more multi-packs to conform with self-service displays; more selling information to simplify product selection and stock control; and greater variety of sizes within a line.

New-Product Boom

Self-service and mass display have become necessary in the drug field largely as the result of a sharp spurt in new items. Almost two out of every five products now on druggists' shelves did not exist six years ago, the FPBAA survey indicates.

Equally significant: the average drug store derived 40 per cent of its volume from new products during the last five years. In the same period, the druggist added only 18 per cent more selling area. Since new merchandise is flowing in at a faster clip than the pace of display-area growth, drug retailers have had to go up—with mass displays—rather than out. Packaging has been an essential feature of this new emphasis on the vertical dimensions of drug displays.

Such "ups and downs" of drug merchandising are materially enhanced by multi-packs. For example, both tubes and spray cans for Rhulicream and Rhulispray poison-ivy medication made by Lederle Laboratories are packed in a multiple carton that affords the primary containers maximum visibility while conserving valuable shelf frontage.

The shortage of display space, particularly acute in smaller stores, is compounded by the introduction of from 10 to 15 new items each year by a typical manufacturer. Thus, druggists have become more discriminating in the selection of products they want to handle.

The solution, says Warren B. Dubin, Pond's division manager for Cheseborough-Pond's: more self-contained cartons that double as displays—and get merchandise out into the open.

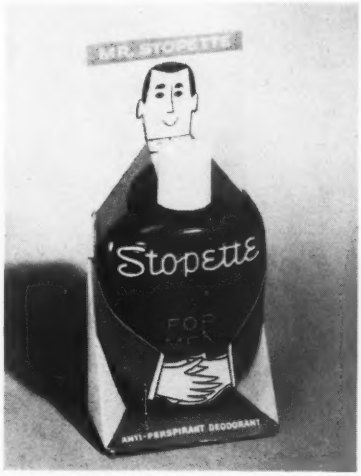
A dramatic illustration is the carton for Mulsavite vitamins distributed by Merck-Sharp & Dohme. Shaped like a castle to emphasize the "fortifying" features of the vitamin, the new package combined attention-getting appeal with an intelligent approach to stacking a dozen 100-capsule bottles in a minimum area.

Brand Identification Vital

The avalanche of new items and the faster pace of self-service has sorely tested brand loyalty. Many drug manufacturers are taking a second look at their packaging to evaluate how effectively their selling messages are "getting through" to shoppers.

A complete revamping of a drug line—with brand consciousness in view—was recently undertaken by The Pyramid Rubber Co., Ravenna, Ohio, for its infants' feeding accessories. Pyramid replaced its long-established blue and plum colors with cartons printed in pink and blue in a checkerboard design. The new cartons create a more forceful "family identity" and

(*Continued on page 527*)



Adding two arms to the Helene Curtis Stopette for Men package changed it into an individual display and helped minimize pilferage.

While pilferage control was the key objective of this carton for Bristol Myers' Ban, it also facilitates stacking.

Packaging such as this helps overcome the problem of space shortage that restricts the use of merchandising aids in today's stores.

There's a subtle feeling of delicacy and gaiety in this bottle. It has fresh, crisp lines that make a light hearted appeal to youth.

It's hard to imagine a more fitting container for cologne, toilet water and kindred products than this ever-popular P-45.

We make this number in 10 sizes from ⅛ ounce to 16 ounces. They can be labeled or decorated to your specifications.

GLASS
STIMULATES
SALES

CARR-LOWREY
GLASS CO.

Designers and manufacturers of fine glass containers

Factory and Main Office: BALTIMORE 3, MD. • New York Office: 415 MADISON AVE. • Chicago Office: 1572 MERCHANDISE MART

COURTESY SEVENTEEN MAGAZINE

HOW TO Increase Fragrance Sales

Selling efforts of the fragrance industry were spotlighted last month by a merchandising executive who focused attention on the industry's failure to keep pace with the nation's growing economy. Suggestions for lessening the gap between lagging perfume sales and increased consumer purchasing power were offered by Burton Sachs, executive assistant to the merchandise vice-president of Bloomingdale's, New York City, when he addressed the eighth annual convention of the Fragrance Foundation. Since fragrance sales are reasonably good during the Christmas and Mother's Day seasons, Mr. Sachs said, the problem is to sell more fragrance during the rest of the year. The major portion of his observations follow:

"I believe that in our advertising and promotion, we should devote far more emphasis to the pleasure to be derived from the use of fragrance. Too large a proportion of our sales have to be gift-wrapped. We don't want to lose this business, but we want more women to buy fragrance for themselves, and to use it more freely. Too many women reach for their perfume only when they wear their jewelry, or dress for dinner or theater . . .

"The recent impressive growth in the sales of bath products provides an example of fragrance successfully being sold to women for their own use and pleasure. When there is none left, they buy more. Contrast this to the decorative perfume bottle probably received as a gift, gathering dust on the bureau. In our advertising, then, let's stress the personal pleasure of using fragrance . . .

"While I was cosmetic buyer, no one in the industry came to me with a practical and attractive spraying mechanism. We need simple, reliable, controllable mechanisms for lobby and street spraying, and we need small, attractive units for counter spraying. The units now called fountains are either wholly unattractive steel trays or meaningless-looking vaporizers. Might not a "fountain" be a fountain, in sculptured marble or brass, and could not a vaporizer be artfully disguised in a flower arrangement? This would be an effective means of reminding people of the appeal of fragrance. Note the success of perfumed bill enclosures.

"Another observation I would like to make is that in my opinion, the industry has been slow to sell fragrance in the form of new products. There are scattered instances of attempting to make fragrance the chief appeal of a hand lotion, body lotion, or hair spray. But there is always the concern that the prestige or quality connotation of the fragrance used will be lessened. And sometimes this concern has been justified. It need not be, however, with appropriate packaging and pricing. If fragrance can sell soap without changing our attitude toward the scent used, why can't it also sell hair sprays, shampoos, hand lotions, and even lipsticks and deodorants—remembering always that they be packaged and priced so that they become an appropriate part of a given fragrance line. Is the appeal of fragrance strong enough? I think it is. And isn't this another way of bringing fragrance into greater use?

"One final point. As the pattern of early Fall selling emerged in our store, it was clear that customers were most interested in merchandise that was new looking and exciting. Aren't change and newness a vital part of fashion, and, for that matter, basic American interests? Do we in the fragrance industry offer enough that is new and exciting? I suspect we don't, and this may explain why we are not holding our own in the fiercely competitive battle for the consumer dollar."

FIVE PILLARS OF SUCCESS

A business dedicated to these five principles is, most certainly, built upon a very solid foundation.

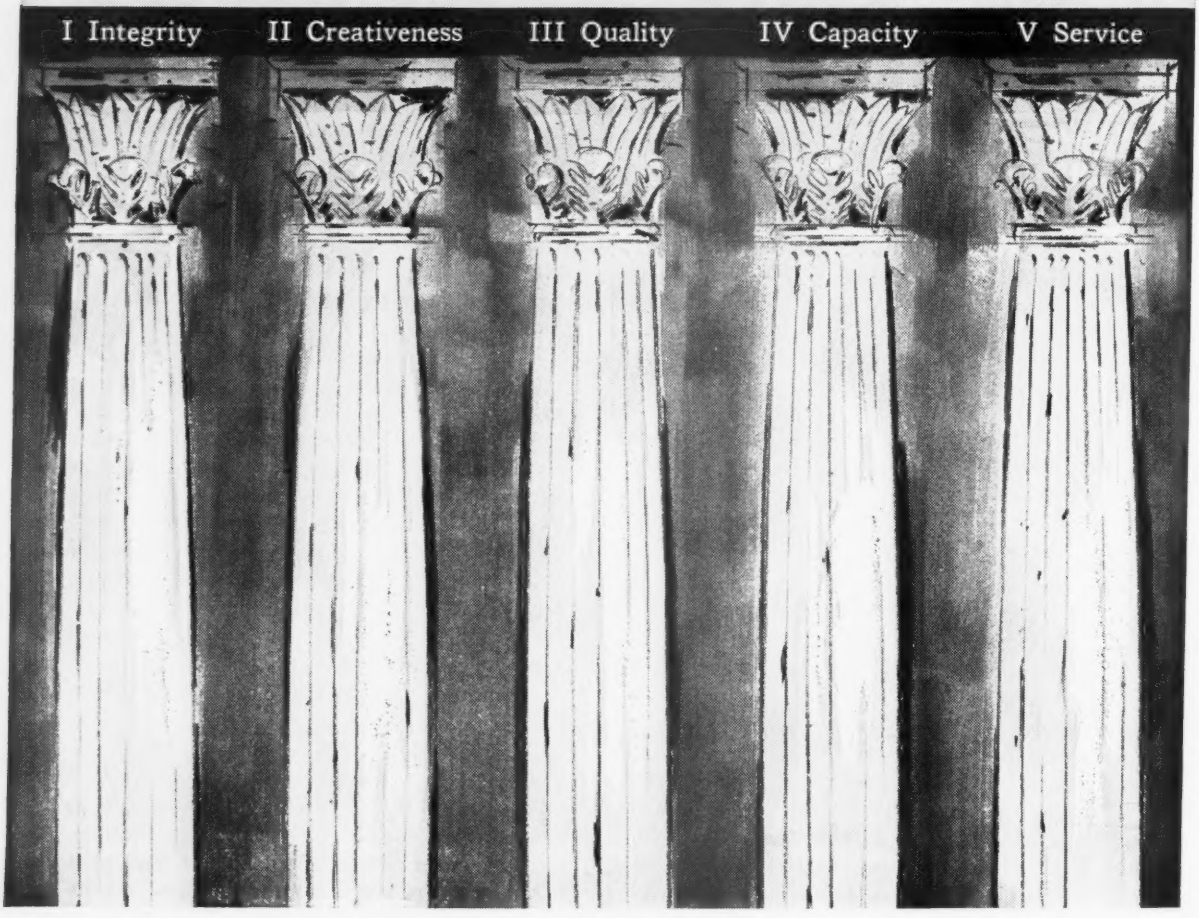
The success that has followed Ivers-Lee, however, was by no means automatic. Managerial imagination, alertness and understanding of changing times were and are necessary components.

Faith was the catalyst that hastened the reaction of all these ingredients . . . faith that our clients have always had in us—the faith we had and have in them and their futures—the faith we had in our suppliers.

All of these, blended in the right proportions, have resulted in an "Integrity, Creativeness, Quality, Capacity and Service" unparalleled in the Unit-Packaging field.

IVERS UNIT PACKAGING LEE CO.
215 CENTRAL AVENUE NEWARK, NEW JERSEY

Ivers-Lee is the creator and Contract Packager of Super-Sealtite, the Catchcover, the Tab Pak and a thousand and one other unusual packages for sampling and distributing single or multiple doses of tablets, capsules, powders, creams and liquid Dropettes.



Packaging and Selling

A Perfume Case History

A perfume company, that is Ciro, is right now in the process of providing an extremely interesting case history showing how a downward sales trend can be reversed by drastic changes in policy, packaging and product improvement.

Ciro is a long established company in the perfume business in the United States. Owned for many years by Hudnut, it is now a separate division in the cosmetic galaxy of Warner Lambert.

During the golden age of perfumes in the Second World War and the three or four years following it, Ciro zoomed substantially beyond the million dollar sales mark and probably reached up in the neighborhood of $2,000,000 in sales. At this time, profits were running at a rate exceeding $150,000 a year.

During the deluge which came three or four years after the close of the war practically all of the innumerable perfume companies that had started up during the war were wiped out. Nearly all of the long established perfumes, had an extremely difficult period of readjustment, with most of them facing declining volume. Ciro sales, comparing with many of their competitors, took a fairly substantial drop from the postwar sales peak.

About this time Ciro introduced a packaging novelty which proved to be one of the top postwar packaging and promotion successes. This was the Ciro originals which were widely imitated in the industry, which captured the Christmas market in the first year of their introduction and which brought to Ciro in the first year approximately $800,000 in sales with a good staple plus during the next three years, that is up to 1956.

However, because of the introduction of these "Originals," a beautiful designed package containing five small bottles, replicas of the package and the product for each of Ciro five odors, and retailing at $5.00, Ciro found themselves caught in the highly unfavorable position of a transition from a prestige perfume company into a promotional organization. There seemed to be no apparent way, at this time, for retracing Ciro's steps and restoring the perfume business and recreating a prestige perfume company. At the same time it appeared that if Ciro failed to come up with a new promotion idea each year that clicked to the extent of several hundred thousand dollars, then it seemed evident that Ciro was destined for the well filled hall of the limbo of forgotten perfumes.

This was the situation when new management entered the picture this year. The problem faced by new management was, should every effort be made to restore Ciro to a position of a recognized prestige perfume company or should all hope be abandoned in this respect and every effort made to create promotion ideas, broaden the distribution even further, lower the prices?

The decisions that have been made pointed in the direction of perfume prestige while still maintaining a flavor of promotional activity.

The first step was a critical analysis of the very excellent five odors of the Ciro line. It was found that these odors could be modernized slightly and the quality stepped up without in any way altering the characteristic odor which previously distinguished the perfume.

As a second step, it was decided to import all of the perfumes from Paris. This was a step, of course, which did not involve great volume because the American market is frankly recognized as a cologne market. The Paris import, however, did give an opportunity to emphasize the new quality of the perfume, it did give a chance for the Ciro salesmen to inspire new retail respect and to emphasize the change in Ciro policy thinking. It also helped to accomplish one of the basic objectives of the company and that is to attain the prestige of a perfume background as a springboard for the marketing of the colognes and other products which would, of course, be manufactured in America and make up most of the volume of the company sales.

The next step was a complete repackaging job which has resulted in a line of very beautiful Ciro packages. An interesting part of this repackaging is that the new packages visualize the companies return to the fashion field. Ciro perfumes will be sold as fashion perfumes and in marketing a close tie in will be made with color consciousness in fashion, home decorating and in other ways in which color has gained recognition over the last ten or fifteen years. Each Ciro odor and package will be identified with a fashion color that harmonizes with the particular odor of that brand.

One of the products that will be particularly pushed in the Ciro line are the aerosols which were first introduced during 1956. Ciro management, in particular Donald Bryant, who is the president of the Ciro Division and the directing head in this year's policy planning, believes that cologne aerosols have a dynamic development awaiting them and he is determined to have Ciro recognized as the pioneer in this field and as the originator of a number of innovations, both in

packaging and in marketing aerosols. For instance, one of the plans which will be aggressively pushed this coming year in marketing cologne aerosols is to persuade leading retailers to establish an aerosol bar in the cosmetic department which will feature not only Ciro's cologne aerosols but that of every other prominent perfume manufacturer.

Substantial stepped up advertising will introduce the new Ciro products and the Ciro policy this fall. Key note of this new advertising campaign is the five color pages which will appear in Vogue Magazine and in Beauty Fashion in October.

As we said before, Ciro is an interesting case history. Anyone experienced in perfume advertising will admit that one of the most difficult jobs in advertising and marketing is to reverse a trend and to about face in policy. This is just what Ciro has done and the results at this time in retail acceptance go far beyond their most optimistic hopes.

Class and Mass

"Gourmet Foods" is to our mind an extremely interesting development in American marketing.

This is a new division of General Foods which will be run as a completely separate division. The new General Foods line is interesting because it is a quality, prestige, highly selected distribution line sold by one of America's most famous mass merchandisers.

Gourmet Foods, a group of luxury products, packaged in a very beautiful and distinctive newly designed line, will be distributed in leading department and specialty stores, a market which has been completely alien and outside of the marketing scope of General Foods.

Whether this represents a new departure in mass marketing or not, it still remains a very interesting experiment by one of America's largest mass marketers—an experiment which may set interesting precedent in other companies operating in a similar way.

Big Bottle

The Pepsi-Cola bottle that is five stories high is made of Neoprene-coated nylon and is inflated with air or helium. It is to be used at fairs, plant openings and other publicity events where crowds are available for the bottle display.

The bottle can be deflated and packaged in a four by five foot tarpaulin case and fitted into a pickup truck or station wagon or it can be flown to a new location like a captive balloon. The cost is reputed to have been around $6,000.

Ulcer's Ahoy

The ulcer brigade marches on in the area around Madison Avenue and in the sanctums of most sales executives there is an increasing hum of agitated activity.

What this means is that business management has now decided that the production problems of the last decade are now largely solved and that in the future the concentrated pressure of management must be exerted on sales and advertising.

Management now believes that sales and advertising executives must willy nilly, ulcers or not, find a way to keep employed all this extra production that they have been piling up.

In the advertising publications and in the advertising news columns of newspapers, are reports of shifting advertising accounts and split up advertising appropriations among the advertising agencies.

This industry has had the questionable honor of producing not only one of the prime shifters in the entire advertising field but one of the major ulcer producers in the advertising business.

This comment is brought about by the recent wholesale shifts of the Revlon account among a number of new agencies.

B. B. D. & O. announced that they were terminating their association effective December 31st for an $8,000,000 share of Revlon's reported $16,000,000 advertising appropriation. "Any word will have to come from the client" according to this agency.

It was not so long ago that McCann-Erickson jittered around with this account for a period of about four years. Agency executives characterize this period as "stormy relations" and again, according to a reliable agency source, seventeen account executives were "chewed up."

Just how much of this feud in agency relations is due to the temperament of company executives and how much due to the severe and growing pressure of the times is anybody's guess.

What we do know from general observations is that sales and advertising executives, after a decade of relatively luxurious ease, have been entering during the past year or so into a period of frenzied activity and pressure.

Super-Packages

Pilferage is an increasing problem in supermarkets and, therefore, a growing problem in package design.

At the recent Super Market Sundries Exposition, the speaker pointed out that the drug manufacturers have been creating larger cartons for products most susceptible to shop lifting. The items mentioned include lipsticks, deodorants and purse-size cosmetics. These larger products were said not only to discourage shop lifting, but to help sales because of their large size and colorful display value.

We wonder if this means that there is a trend toward giving the supermarket a different package for the same product when this product is sold through different classes of retail stores.

Willy-Nilly

In a facetious sort of way it sometimes occurs to Americans that they are subject to a far heavier torrent of persistent brain washing than could ever occur in China or Russia. It is true, of course, that the brain washing in this country is a non-government, nonpolitical and purely commercial torrent of advertising words that pour into our ears over every television and radio program and through our eyes in a multitude of printed matter and outdoor signs.

This torrent would be enough to scare the life out of anybody who stopped to think about it if we were not being assured by psychiatrists that the American consumer is developing a thing known as selective inattention and if we were not continually assured by advertising men themselves that there is a mounting tidal wave of disbelief toward a great deal of advertising.

However, it seems that we may be on the point of

glass containers move more drug products

Use **Anchorglass**® *containers sealed with* Anchor® *caps*

...because they are chemically inert

GLASS containers are chemically clean and chemically stable. Because they are high in chemical durability they cannot change your products... the purity, strength and other qualities which characterize them are effectively protected until the contents are entirely used up. They do not rust or corrode. They prevent evaporation, leakage or moisture absorption. And they invite product inspection, afford a visual inventory, inspire confidence for your product quality. Move more of your drug products—pack them in Anchorglass Containers sealed with dependable Anchor Caps.

ANCHOR HOCKING

GLASS CORPORATION

Lancaster, Ohio

Smart merchandisers — men who really know how to sell packaged goods — are still amazed at the strong relationship between package design and consumer sales. Not amazed that the relationship exists . . . but amazed at *how much* it exists.

It just might be high time that you took another look at your package. Is it up-to-the-minute in safety and convenience? And above all, does it attract the consumer at the point of sale?

Imco squeeze bottles have all this and more too. They're lightweight to save shipping costs, and unbreakable to save handling costs. Imco carries a wide range of stock plastic bottle designs and sizes that may meet your immediate requirements. Better still, Imco's design specialists will be glad to help you create an exclusive plastic container to fit your product's *particular* needs.

IMCO CONTAINER CORPORATION

Empire State Building, Room 6204
350 - 5th Ave., New York, N. Y.

27-67 Vine Avenue
Toronto, Ontario, Canada

75th & Cleveland
Kansas City, Mo.

608 McCall Building
Memphis, Tenn.

Palmolive Building, 919 N. Michigan Ave
Chicago, Illinois

4515 Olive St
St. Louis, Mo.

5957 South Western Ave
Los Angeles, Calif.

being submerged without our knowledge, consent or volition. A new process has been developed which goes under the names of Subliminal projection. This is something to scare the life out of any consumer who is not willing to immediately surrender to the advertising message. While we confess to a complete inability to understand how this product works, the explanation is frighteningly simple. The company producing this Subliminal projection simply attaches a gadget to a movie or a TV projector which flashes messages so fast that the human eye does not see them, but the subconscious eye does and the message registers.

These meteoric messages or invisible advertising are super imposed on top of the movie program or the television program.

In a recent test in a moving picture theatre, while the audience was enjoying the movie program, their minds were being bombarded by this invisible, but to the subconscious eye, visible message, to drink Coca-Cola and eat pop corn. During this show coca-cola sales rose 18.1 per cent while pop corn rose 57.7 per cent.

We are often eagerly in favor of the elimination of the television commercial. Now we confess to considerably greater uneasiness about the coming substitute.

Fancy Decanters

An announcement by a major distiller, that is National Distillers Products Company, that they will drop fancy decanters this year and go back to the regular bottle which will be gift wrapped, appears to have some significance to this department.

The records of this department shows that when the first mad rush by the distillers for fancy decanters began we prophesied that the liquor industry was walking into exactly the same trap that has puzzled and distressed the perfume industry through most of its life. We also ventured very serious doubt whether the increased cost of the fancy decanter could be absorbed by, and would it be paid for, with enough increased sales.

In spite of the magnificent record of the packaging industry with its wealth of imaginative ideas and practical research, the time has come to question whether this industry is going a little too far in some fields, from the viewpoint of a sound economy in the distribution of certain types of consumer goods.

The packaging industry has expedited mass production, has been a potent factor in expanding sales and consumption, has contributed enormously to the safe and sanitary transfer of goods from the factory to the consumer and has brought many useful improvements in product application to the people.

Nevertheless, in certain fields, particularly in food merchandising, it is becoming open to question whether packaging can justify some of the increased costs of food, for which it must share the blame. A recent government statement put it bluntly that the increase in food prices over the last few years was primarily due to processing and packaging of many staples.

As the liquor industry showed clearly during last Christmas season, enthusiasm for packaging can bring an industry to the point of hysteria in uneconomic expenditures. Packaging has a primary function to perform. Let's not overdo that function.

Research

Here's a quote that you may be able to apply to some company who believe that they are proudly research minded. "Science is not an extra you can attach to a sleepy firm and expect results. Technical progress is part of the general liveliness of a progressive firm."

Drychosis

Every once in a while some advertiser gets the idea that the way to sell a product is to invent a new word or at least to vitalize a word that hardly anybody ever heard of before. Of course, the famous parent of all such words is halitosis.

A new word soon to be propelled into the cosmetic business with dreams of establishing it as another "halitosis" is "Drychosis." This is a new word that simply means dry skin. According to the new Lady Esther advertising campaign, "Most women today have Drychosis. New Lady Esther dry skin cream ends Drychosis."

Scented Home

At various times in the last several years various people interested in fragrance sales have tried to introduce fragrance into the home.

These folks have had a good precedent for being optimistic that this new fragrance market, with almost unlimited opportunities for expanding sales, could be obtained with the application of a certain amount of energy and persistence.

Two or three years ago the Fragrance Foundation made a feeble and ineffective effort to arouse some interest in this market. When they discovered that the plums did not promptly drop into their lap, it was just as promptly abandoned.

During these years the various branches of the home decorating industry, that is floor covering, furniture, upholstery, and draperies and so forth have had an almost unbelievable success in making the woman homeowner color conscious and, in this way, greatly expanding and enriching the home decorating industry.

It seems possible now that a plumber will succeed where perfume people failed.

There is being built in Disneyland the home of the future, a five room plastic dwelling planned by such companies as Monsanto, American Telephone and Telegraph Company, Crane Company, Yale and Towne, Armstrong Cork, Sylvania and others.

Crane's contribution is in furnishing the heating, cooling and air conditioning system. The air conditioning system wafts a pleasant odor into each of the rooms. The odor for each room can be individually controlled. For instance, the living room can smell like a pine grove or have a fresh outdoor smell of new mown hay or a sea side smell or whatever you wish, while the bedroom can be scented with your favorite floral or your boudoir with a lush oriental.

At this moment we do not know whether this is the idea of a plumber who went to a fragrance house

New Perfection

DROPPING PARTS

Protect YOUR PRODUCT'S REPUTATION

#1

Non-rolling, extra-depth, Bakelite cap; thick-flange rubber bulb; Saftee-ball glass.

#3

Regular plastic cap; thin flange rubber bulb; semi-blunt glass.

#4

Metal cap: AMEKINE oil-resisting synthetic rubber bulb; blunt glass.

Improved bottle shape. Designed to lie flat for convenient labeling. Front provides ample label space.

Your product's hard-won reputation is risked every time it is taken from the medicine chest. Any inconvenience, such as a non-functioning dropper, will be permanently associated with it. You can remove this risk by entrusting your carefully-compounded preparation to New Perfection dropping parts—painstakingly made of quality materials for the utmost in dependability and cleanliness.

✱ ***We can supply dropping parts to fit your bottles or furnish complete with our own bottles.***

RUBBER BULBS

are supplied in many styles and colors. Oil-resisting AMEKINE synthetic rubber is used for oil preparations; natural rubber is supplied for other products.

CAPS

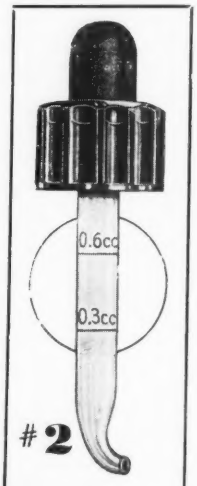
of plastic or metal, can be furnished in a complete range of sizes and colors.

DROPPER GLASSES

are available in a wide variety of styles and sizes. Plain or CALIBRATED in any color to mark specific dosages.

BOTTLES

in an attractive modernistic style in Amber, Blue, Green or Clear glass, are available, complete with dropping parts, in the following sizes: ⅛, ¼, ½, 1 and 2 oz.



#2

Non-rolling extra-depth Bakelite cap; thick flange rubber bulb; CALIBRATED special bent glass.

Write for Samples and Quotations

PENNSYLVANIA
GLASS PRODUCTS CO. INC.

"Glass Goods of the Better Kind"

430 N. CRAIG ST. • PITTSBURGH (13), PA., U.S.A.

for help or the idea of a fragrance house who suggested it to a plumber.

However, we are impressed with the fact that at Disneyland quite a substantial number of thousands of people will, for the first time, visit a scented home.

Pity Big Business

Pity big business. Let's all of us shed some bitter tears at their hardships.

It seems that it is growing increasingly expensive to introduce a new product. For instance, the president of the Carnation Company stated recently, "Not a week goes by but someone comes in and wants us to buy a new product and introduce it on a national basis." This leading executive then continued, "To take on a new product and build a national market we have to be prepared to invest three million to five million dollars before it becomes profitable to us."

Sometime ago we quoted the head of a big soup company in some similar remarks—that is, that there was an absolute compulsion to bring out new products in order to stay in business but yet the cost of introducing a new product was becoming fabulous.

We also quoted some time ago from the president of one of the leading soap companies in his report to stockholders that they would not consider introducing a new product unless it justified an initial investment of five million dollars.

Sitting here in a crow's nest of the editorial office of a trade magazine we see a continual flow of new products introduced by companies of all sizes from tiny one man enterprises to big companies. We note with interest and curiosity that the majority of product successes are made by relatively small companies, some of whom, lacking three million dollars, have to scrape hard to get three thousand dollars for the introduction.

We note also that these big enterprises who need a lot of million dollars to produce a new product are continually scurrying around to find some little successful fellow who spent practically nothing to introduce his successful product in a rush to buy him out.

We would like to suggest to some of these great big companies who don't know how to advertise, who don't know how to package a product, who don't know how to create a new product idea and who don't know how to introduce it unless they have a million or more dollars to spend, that they hire some of these little fellows and turn them lose with a few thousand dollars.

Of course, we understand that why these big companies cannot operate unless they can spend so many million dollars is that they want to shoulder their way into a competitive field within a few months instead of a few years and they do not want to do business unless through the weight of their capital they can grab a major share of the market.

However, a look at the record shows that things are doing very nicely because the big boys are sitting around trembling with fear to introduce a new product. Until they have saved up the necessary several million dollars, dozens of little fellows are going into those particular fields and winning a good market position which the big fellow can then buy.

Smelling Tweed

With intrigued attention we have just finished reading the publicity release which gives the details of the new Lentheric perfume promotion.

This promotion is a jingle contest based upon color pages in Life.

Since there are no box tops to send in as a means of joining this contest where the rewards are such things as a trip to Paris or a $6,000 mink coat, the Lentheric executives have decided that the proof of purchase for a contestant should be a scented entry form sprayed with one of the four Tweed products, that is a hair spray, a bouquet, shampoo or a bath powder.

Based upon a normal expectation of replies from a four-color schedule in Life we would guess that this would be the biggest, all-out gigantic marathon by perfumers in the history of perfuming. Such a colossal collection of sniffing has certainly never taken place in the perfume industry.

We do not know just how Lentheric is going to handle this problem of telling (1) Whether the odor submitted is really Tweed at all, (2) Whether it is authentic Tweed or one of the many similations, or (3) After about the first 15,000 samples, whether it smells at all.

Aid to Beauty

In this age of industrial design, everything seems to be going fashion wise and so, why not the garbage can?

The Senate Beauty Salon in Chicago have decided to advertise their services with a highly decorated garbage can.

The can was painted, and while the paint was drying and still tacky, silver stars were applied. Sequins were applied to the letter "S" in "Senate" and "Salon," and a paper cut out of finger nail polish was glued to the can.

We received this gem of publicity from the "Galvanized Ware Manufacturers Council."

Here and There

Supermarkets last year controlled 58.9 per cent of grocery volume, the largest ever yet.

So far as the East Coast goes with its prolonged drought, Pepsodent's timing in offering a plastic raincoat premium with a tooth paste was not so hot.

The number of food chain buying offices has increased from 3,019 in 1953 to 3,493.

A vice-president of Kroger recently stated that the battery of vending machines placed outside their stores in the Detroit area was a possible answer to the current Sunday opening controversy in the supermarket field.

•————•

Metropolitan Newspaper Markets, a survey of unduplicated families reached by metropolitan dailies in each state, has just been published by the research and marketing department of the Richmond Times-Dispatch, Richmond, Va.

•————•

A shift from two to three horizontal panels has been made by a food company as a way of getting instant product identification on the shelf or in the freezer. A survey showed that with the two-panel design, brand identification was lost in some positions for the package.

Colonial

Cellophane Packaging

For Eye Appeal

EYE APPEAL is "buy" appeal in today's highly competitive marketing picture—and there's nothing that adds more sparkling freshness than Colonial's cellophane packaging. Consumers like that fresh, clear look—that sparkling "top of the morning" freshness that catches the eye and clinches the buy.

When that spotless Colonial dropper assembly is placed automatically into its gleaming cellophane package, it's a guarantee that it's going to stay spotless and dust-free right through to the ultimate consumer.

Colonial's cellophane pack is good insurance against breakage in side-by-side packaging, too.

Let us make free samples to your exact specifications. Contact our representatives listed at right, or write direct.

REPRESENTED BY

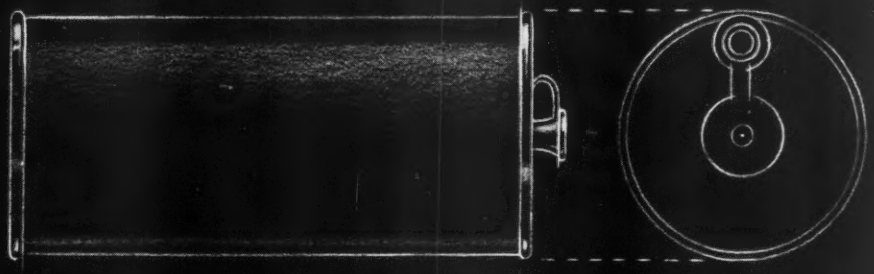
CHARLES E. SCHWAB
122 E. 42nd St., New York 17, N. Y.
Ph: OXford 7-0760

HARRY M. GRABER
811 S. 53rd St., Philadelphia, Pa.
Ph: GRanite 6-6311

ALLEN J. GRETSCH
327 S. LaSalle St., Chicago 4, Ill.
Ph: WAbash 2-1619

GABLER & GABLER
435 S. LaCienega Blvd., Los Angeles 48, Calif.
Ph: BRadshaw 2-2995

COLONIAL APPLICATOR CO.
VINELAND, NEW JERSEY



Attractive, convenient

squeeze containers of a Du Pont ALATHON® provide new ways to stimulate sales

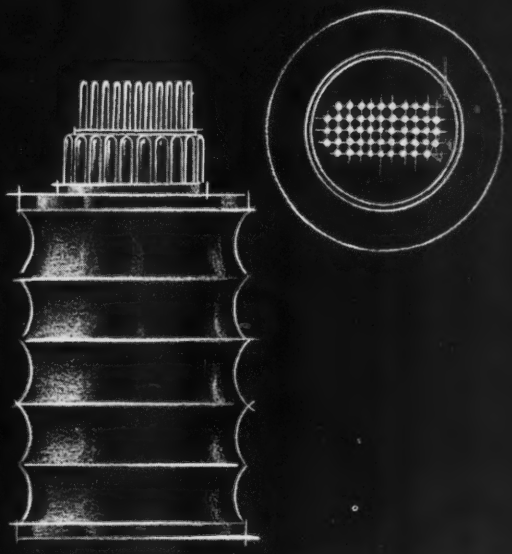
More attractive to look at... more convenient to use, squeeze containers designed in a Du Pont ALATHON polyethylene resin provide new opportunities to improve your package... increase your sales.

Remarkably resilient, containers made of ALATHON snap back quickly between squeezes... seal in essences, aromas and flavors. ALATHON has outstanding strength. It never becomes brittle or deteriorates... affords lasting protection and longer shelf life for products. Since ALATHON is tasteless, odorless and non-toxic, it can in no way harm contents.

Du Pont has established a family of ALATHON polyethylene resins for a range of packaging requirements. For example, ALATHON 20 offers outstanding resistance to environmental stress cracking while ALATHON 34 is particularly well suited when outstanding impermeability is important.

Whether your product is a liquid, cream or powder, it will pay you to investigate the merchandising advantages of strong, lightweight squeeze containers made of an ALATHON.

For more information, write to E. I. du Pont de Nemours & Co., (Inc.), Polychemicals Department, Room 2510, Du Pont Building, Wilmington 98, Delaware



DU PONT
REG U.S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

GENUINE GOLD... the classic symbol of elegance and refined taste... can be applied like any ceramic label or decoration... at a cost only slightly higher than common color. Screen printed on glass or ceramic surfaces, permanently fired to resist abrasion and corrosion, Hanovia 22 Karat liquid gold adds the vital "extra" to any sales program.

Take advantage of the eminence inherent in real gold printing or decoration on ceramics.

For more information contact your glass container supplier.

Hanovia

HANOVIA

CHEMICAL & MANUFACTURING COMPANY

1 West Central Avenue, East Newark, New Jersey

ENGELHARD INDUSTRIES

News in Packaging . . .

Tin Can Held the Solution To Cosmetic Package Costs

"Dressed up with imagination and ingenuity," the tin can offers a solution to the problem of high cost cosmetics packaging, according to J. H. Fredette, assistant general manager of the new products department of American Can Company. He told the Chicago Society of Cosmetic Chemists that the tin can affords maximum product protection and provides the packaging sales stimulant so important to the industry.

"The cosmetic industry is generally considered to be a luxury priced, high mark-up business," Mr. Fredette said. "The higher profit business usually is able to put more money than other industries into premium packaging. Primarily, this is done in search of those aspects of the package which serve as sales stimulants.

"This practice relies on the type of high level economy which we fortunately have enjoyed over the last decade. It may not always be thus, however. The economically priced metal container, when dressed up with imagination and ingenuity, and backed up with the research and technical skills developed over many years by the packaging industry, is capable of earning a bigger portion of the cosmetic industry's packaging requirements."

Mr. Fredette predicted that technological developments soon will make it possible to pack such products as face creams, hand lotions, skin fresheners and shampoos in cans—or in new packages combining metal with aluminum, paper, fibre or plastics.

Helene Curtis is packaging its Lanolin Discovery in a coral and black box with a coiffure picture on the front, and on each side, a diagram explaining how to use the aerosol dispenser.

Coatings for Plastic Containers

Two new external coatings that provide extra protection and enhance the appearance of polyethylene containers have been announced by Bradley Container Corporation.

The company has stated that its varnish coating, "Hi-Gloss," has been used in production runs of tubes and bottles for toiletries. When applied to polyethylene, the coating imparts a high sheen, the manufacturer said.

Bradley has also announced that its "Barrier Gloss" gives natural polyethylene a glass-like clarity.

Zytel Aerosol Bottle

An aerosol bottle made of du Pont's Zytel 42 has been developed by the Plastic Container Division of Continental Can Company. Currently available only in a four-ounce size and in the Boston Round shape, the container is being made in natural (light straw) and standard colors. Additional sizes and package shapes will be offered at a later date.

Aerosol Research Grant

Dr. Ivor Griffith, president of the Philadelphia College of Pharmacy and Science, has announced the award of a grant by Aerosol Techniques, Inc. to the college's Department of Pharmacy, which recently installed an aerosol laboratory for basic and applied research.

Purpose of the grant is to make possible the investigation of basic physical and chemical relationships between propellents, medicinal agents, and vehicles. The research program will be directed by Dr. Martin Barr, Associate Professor of Pharmacy, with the collaboration of Dr. Linwood F. Tice, Director of the Department of Pharmacy.

The Rx Med-Box developed by Owens-Illinois for use with the company's Dry Rx Squares is a white plastic carrying case which fits snugly on cap of the container. Customer simply lifts off box and separates the two sections, fills it with day's supply of tablets or capsules and closes it.

$20 Million Drug Aerosol Market By 1960 Is Indicated by Survey

A $20 million market for drug and pharmaceutical aerosols could be achieved by 1960 through consumer promotion and education, according to marketing experts of the Du Pont Company's Freon Products Division. This prediction is based on a nationwide survey conducted last year and only recently analyzed. Estimated 1956 sales of some two and a quarter million units, retail-valued at about $3,500,000, were attained with what the company describes as a startling lack of consumer promotion. The 1956 sales, the company states, amount to only two per cent of the total retail sales of drugs and pharmaceuticals which lend themselves to aerosol packaging.

Less than five per cent of housewives interviewed personally had ever heard of burn remedies in aerosols and only one out of a hundred had ever used a push-button spray to treat burns. Yet, Du Pont marketers pointed out, such products have been available on the open market for at least three years, with the aerosol having distinct advantages of painless, easy, fast application. Only three per cent of the women interviewed had heard of spray bandages, and only one in a thousand had actually used one. In the case of antiseptics, only two per cent of the interviewees were aware such products were available in aerosol packages, and only four out of every thousand women had used them.

Slightly more than 800,000 pharmaceutical aerosol packages were produced in 1953 as compared with the estimated 2,225,000 units in 1956.

Patent thoughts and trends

by Thomas Cifelli, Jr., PATENT ATTORNEY*

DR. BUSH'S PROPOSALS FOR IMPROVING U. S. PATENT SYSTEM

Introduction

Proposals for changing the U.S. patent system are nothing novel. As a matter of fact, one might even say that such proposals arrive almost with the frequency and regularity of the swallows at Capistrano. Consequently, the mere presentation of another proposal for changing the patent system should not in and of itself cause any furore.

However, there is much about the latest proposals, by Dr. Bush, to put them in a very unique category. In the first place, Dr. Bush's study resulting in these proposals was made at the specific request of the Senate Subcommittee on Patents, Trademarks and Copyrights, under Senator O'Mahoney. Dr. Bush's study is the first of a number of special studies which this subcommittee has authorized in connection with its work in making a complete examination and review of the patents statutes. While this does not mean that the views of Dr. Bush are necessarily the views of the subcommittee, it seems to go without saying that Dr. Bush's views will be given careful consideration by the subcommittee. The main reason for the importance of Dr. Bush's proposal, in the opinion of this writer lies in the very fact that they represent the considered views of perhaps the most knowledgable man in the entire country on this subject. Dr. Bush combines, perhaps uniquely of all men, a distinguished scientific career, a distinguished business career, and contact with the U.S. patent system from many angles. During the war he was director of the Office of Scientific Research and Development and prior thereto was long connected with Massachusetts Institute of Technology and the Carnegie Institution in Washington, D.C. He was Chairman of the Advisory Board established by the President in 1933 to study the patent system and served as a member of the Patent Survey Committee appointed in 1945 to conduct a similar study. His business directorships include those with Merck and A. T. & T.

In tackling the study for the Senate Subcommittee Dr. Bush divides his subjects into 3 parts as follows:

A. Purposes and Objectives of the Patent System,
B. Current Problems of the Patent System, and
C. Recommendations for Improving the Patent System.

The first of these categories will be considered in the present article. Later issues will consider parts B and C.

As was to be expected, Dr. Bush's study is a scholarly and fair evaluation of the patent system. It will not please extremists of any stripe, either those who find nothing bad in the patent system or those who find nothing good in it. Dr. Bush points out the 3 main purposes of the patent system as (1) furnishing incentive to invent, (2) to invest, and (3) to disclose. He also reconciles the basic philosophy of a patent grant with the well-known public antipathy against monopolies, pointing out that Thomas Jefferson was a supporter of both the patent system and the anti-monopoly viewpoints. Since Dr. Bush himself can speak more eloquently about the subject than any reviewer and since, in the words of Senator O'Mahoney "the public interest will be served by its publication, distribution, and consideration," we now give Dr. Bush's own words, rather than continue with an abstract of his study.

A. Purposes and Objectives of the Patent System

Those who built the governmental structure under which we live were exceedingly wise, and they were particularly so when they created a strong patent system based on the Constitution.[1] It has three great objectives:

First, it aims to stimulate both invention and the assiduous search for new applications of knowledge, which is the basis of invention. It does this by placing the inventor in a position to secure a reward.[2]

Second, it seeks to create conditions whereby the venture of funds to finance the hazardous introduction into public use of new devices or processes will be warranted. This is done by protecting the industrial pioneer for a limited time against the uncontrolled competition of those who have not taken the initial financial risk.[3]

Third, it aims to prevent the creation of an industry permeated by the intense secrecy with regard to its processes which characterized the medieval guilds and which can only retard the realization by the public of the benefits of scientific progress. This it does by extending a temporary monopoly to those who, in keeping with the American ideal of openness and frankness, will make a full disclosure of their new ideas so that they may be utilized to the full by those skilled in a particular art.[4]

Our early statesmen were fully on their guard against special privilege or the abuse of monopoly to the detriment of the interests of the public, and they had real reason to be as they viewed the industrial history of the countries from which they or their forebears had come to this land. Yet they appreciated also the necessity for safeguards that would secure to citizens the enjoyment of their personal property in their land and possessions, and extended to them the support of the basic law in excluding others from them. They did not hesitate, moreover, to extend similar ownership to ideas, to authors by copyright and to inventors by patent. In fact Thomas Jefferson, who was certainly vocal in regard to the evils of the type of monopoly which had plagued the Colonies from their inception, nevertheless favored strongly a patent system.[5] Since those

*Richards and Cifelli, Newark, New Jersey

[1]Art. I, sec. 8, of the Constitution of the United States provides that the Congress shall have power "To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

[2]See *Allen* v. *Hunter*, Fed. Cas. No. 225 (C. C. Ohio, 1855).

[3]This objective is well illustrated by the testimony of Charles F. Kettering, vice president, General Motors Corp., in U. S. Temporary National Economic Committee, Investigation of Concentration of Economic Power, hearings, pt. 2, December 5-16, 1938, pp. 341-345 (referred to hereafter as TNEC).

[4]See *Attorney General ex rel. Hecker* v. *Rumford Chem. Works*, 32 Fed. 608 (C. C. R. I., 1876).

[5]Jefferson wrote: "Certainly, an inventor ought to be allowed a right to the benefit of his invention for some certain time. Nobody wishes more than I do that ingenuity should receive liberal encouragement." He was likewise of the opinion that "in the arts, and especially in the mechanical arts, many ingenious improvements are made in consequence of the patent right giving exclusive use of them for 14 years." (U. S. Patent Office, The Story of the American Patent System, 1790-1952, Washington, U. S. Government Printing Office, 1953, p. 1.)

Just grip—bend—snap! Kimble COLOR-BREAK Ampuls are ready to use. No filing, sawing, scoring. Kimble Multiple Dose Containers and Kimble Syringe Cartridges, available in wide range of capacities.

Your injectables deserve Kimble-quality páckaging protection . . .

PERFECT CONTAINER protection is an absolute "must" for serums, drugs and other life-saving solutions.

When you package in famous Kimble containers, you can be sure that your parenterals will maintain utmost purity, consistent potency. For Kimble containers cannot contaminate or alter the effectiveness of their contents. Here's why:

To assure top-quality protection, Kimble Neutraglas bottles, syringe cartridges and COLOR-BREAK® Ampuls are made of a special-formula borosilicate glass which has the highest resistance to chemical attack of any known "workable" glass.

For detailed information, sizes and prices of Kimble's complete family of containers, write Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

KIMBLE LABORATORY GLASSWARE
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES · TOLEDO 1, OHIO

STRIKING CAN DESIGN AND LITHOGRAPHY GIVE SALES MESSAGES EXTRA POWER . . .

Certain products, like those shown above, need plenty of room for displaying product information to its best advantage. That's why these famous brands (among many others) chose Continental's specialty cans as their packages. There's such a wide variety of sizes and shapes, that the *perfect* choice is easy, no matter what the product. As for lithography . . . well, there aren't many who can touch the *Continental* craftsmen. Why not put your product in one of our specialty cans? You can't do any better.

Continuous message... Continuous design

No matter how the can is turned, there's something to stop the eye and help stimulate that impulse purchase. Choose from a rainbow variety of unusual and provocative lithography designs.

QUALITY Continental SERVICE

CONTINENTAL CAN COMPANY

Eastern Division: 100 E. 42nd St., New York 17
Central Division: 135 So. La Salle St., Chicago 3
Pacific Division: Russ Building, San Francisco 4

days we have recognized the advantages of monopoly in the public utility field, and placed it under regulation. We have also enacted anti-trust statutes to prevent unreasonable restriction of competition. But the rights granted under patents have remained substantially unchanged. It is the patent monopoly with which we are here primarily concerned. Our forebears made the latter a temporary monopoly and imposed upon it practically no further governmental control.

It worked well. This country has prospered beyond all others in the wide application of new techniques and in advanced industrial processes. Undoubtedly much of this was due to the width of the land in which great homogeneous markets were developed, and to the pioneering spirit of the people which could be applied as well to industrial as to geographic frontiers. Yet the patent system was largely responsible for the vigor of our small enterprises and for the effectiveness with which new things were promptly brought into use.[6] Life was made more comfortable, healthy, and worth living for large numbers of our citizens.

Yet it would be a fallacy to assume that all progress in bringing new devices into use depends upon the inventor, or even upon the industrial pioneer. It is well to emphasize that back of all material innovation lies a great body of science, and that the extension of our scientific knowledge is fully as important as its application. The fundamental scientist, working in his study or his laboratory, is not concerned with the utility of his findings; in fact when he becomes unduly thus concerned he ceases to be a fundamental scientist. He cares little about the patent system, and usually knows practically nothing about it, for it is of no moment whatever in what he does.[7]

To a certain extent this is true even of the applied scientist. And, in this connection, it is notable that there are many inventions made in the course of scientific research which never need the machinery of the patent system in order that they may be useful. Any research scientist in a laboratory who is worth his salt is making inventions every little while, new and useful combinations which would be patentable under the law, but which he never thinks of patenting. His ingenuity is devoted to finding ways in which he can get at a scientific result, and the tricks he uses to attain a measurement or to bring materials into a special form are just a part of his overall effort. They may indeed be of use to other researchers as well, and he publishes them freely when he presents his results. Usually they involve procedures that any laboratory may readily adopt, constructing the necessary apparatus from components readily available to all. There is no need whatever for the use of a patent system in order to bring them into use. And no sound scientist would think of attempting to exclude others from the ingenious laboratory procedures which he has found useful in his own research.

Occasionally instruments and the like are invented in scientific laboratories which are of general use, and in such cases the patent system is often of aid in bringing them into use.[8] But these are exceptions. The real point is that, throughout scientific work, especially of a basic nature, inventions are freely made as a part of the scientific research process, yet the operations of the patent system are of secondary moment, although such research provides the basis on which all future technical progress depends.

This attitude among scientists which relegates patents to a position of secondary importance is both understandable and, in amny areas of inventive activity, quite sound. Many of them feel that they wish to have nothing to do with the patent system in any way. This is an aspect of their general attitude that, in fundamental science at least, they work to advance man's knowledge and do not wish to be concerned with minor objectives. This attitude is especially strong among medical men, and among those conducting medical research.[9] They do not wish their work for humanity to be contaminated by considerations of profit, or the mores of the market place. Usually they are quite right, and the inventions they make will become of benefit without the aid of patents.

Unfortunately, they often carry this point of view over into an area in which it does not apply, and genuine advances of a technical nature become impeded. This is because they often fail to grasp the fact that the introduction of new methods sometimes requires far more than the mere conception of an idea, and that these special cases require explicit action.

An example will illustrate this point. When the obstetrical forceps were invented, the invention was held secret for a time, and passed down from father to son, while many women suffered unnecessarily.[10] Any scientist who took such a course on an important matter today would certainly be ostracized by his fellows. He would be regarded as a worthy member of his profession only if he published promptly for the benefit of all his colleagues. Still, even if made known at once, the probability is that it would have been years before such an instrument was manufactured in quantity and generally introduced. The patent system, properly used, could have expedited this process, by rendering it justifiable for some industrial organization to spend the money needed for development, tooling, and introducing such a device.

There are also in-between areas in which the patent system is not of primary or crucial importance in the development of new products, but still can be used to public advantage even where private profit is not the objective. In fact, in cases where scientific laboratories of a nonprofit nature avail themselves of the patent system in cases of this general nature, they usually forego a profit entirely or else, which seems fully justifiable, direct any income which may occur into channels where it is used

(Continued on page 553)

[6]For typical quotations on these benefits of the American patent system see the foreword by Robert L. Lund in Patents and Industrial Progress, by Folk, New York, Harper, 1942, pp. ix-xiii. See also the two pamphlets issued by the National Association of Manufacturers: Patents, Progress, and Prosperity, by William R. Ballard (Economic Series No. 62), September 1953, and The Importance of the United States Patent System, addresses given at seminars on What Inventions Mean to You, held by the patents committee, NAM, 1948-52 (Economic Policy Division Series No. 56), December 1952.

[7]See Inventors Behind the Inventor, by Burlingame, New York, Harcourt, Brace, 1947, and Inventors and Moneymakers, by Taussig, New York, Macmillan, 1915, especially ch. 1, The Instinct of Contrivance.

An apt illustration is provided in a two-page chart on the geneology of an invention (television) in Fortune, vol. 50, December 1954, pp. 134-135.

Benjamin Franklin declined a patent for the "sole vending" of the Pennsylvania fireplace invented by him, with the following comment: "As we enjoy great advantages from the inventions of others, we should be glad of an opportunity to serve others by any invention of ours; and this we should do freely and generously." March of the Iron Men, by Burlingame, New York, Scribners, 1938, p. 79.

[8]On the relationship of research and patent departments in industrial corporations, see, for example: The Theory and Practice of Industrial Research, by Hertz, New York, McGraw-Hill, 1950, ch. 13, Patent Policies in Research, pp. 307-333, and The Organization of Industrial Scientific Research, by Mees and Leermakers, New York, McGraw-Hill, 1950, pp. 279-284.

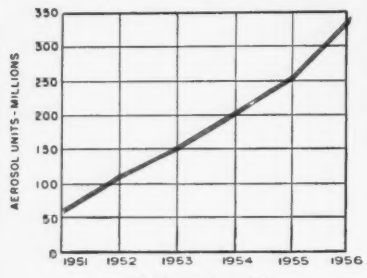
[9]As Dr. Torald Sollmann, dean emeritus of Western Reserve University School of Medicine, wrote in an essay, Fundamentals of Medical Research, published in 1946: "The medical profession traditionally looks askance on patents because by definition they aim to restrict the free use of discoveries that should have the widest possible application to human welfare." In Smith (ed.), Medical Research, a Symposium, Philadelphia, J. P. Lippincott, 1946.

See also American Medical Research, Past and Present, by Shryock, New York, Commonwealth Fund, 1947, pp. 140-144; and Medical Patents, by Palmer, Journal of the American Medical Association, vol. 137, June 5, 1948, pp. 497-508.

[10]See Priests of Lucina, the Story of Obstetrics, by Findley; Boston; Little, Brown, 1939, ch. 12, The Chamberlens, pp. 155-168.

AEROSOL

Look at the way aerosol sales have been skyrocketing:



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for you!

If you've had your eye on aerosols, you've seen sales skyrocket from 40 million units in 1951 to 320 million units in 1956 . . . taking a dominant position in sales of hair lacquers, insecticides, shaving lathers, room deodorants and many other products.

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If your product can be sprayed, brushed on, dusted or daubed, it's a likely candidate for aerosol packaging. General Chemical will help you develop a formulation with the right pressures and compatibilities for your product and container. *No cost or obligation!* And there are many capable contract fillers throughout the country who will put up your product in aerosol form for test marketing, and handle full commercial production, too. You do not have to invest in plant, special equipment or personnel to get into aerosols!

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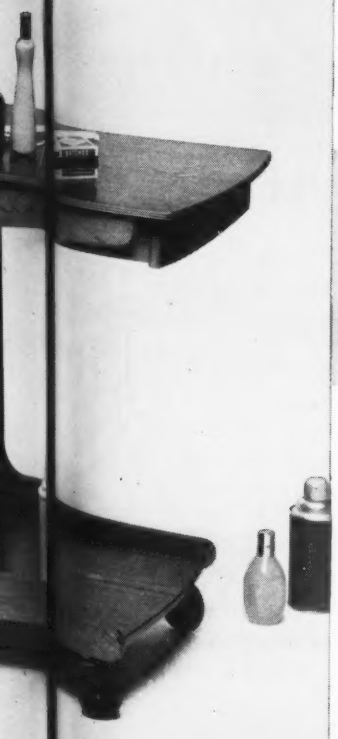

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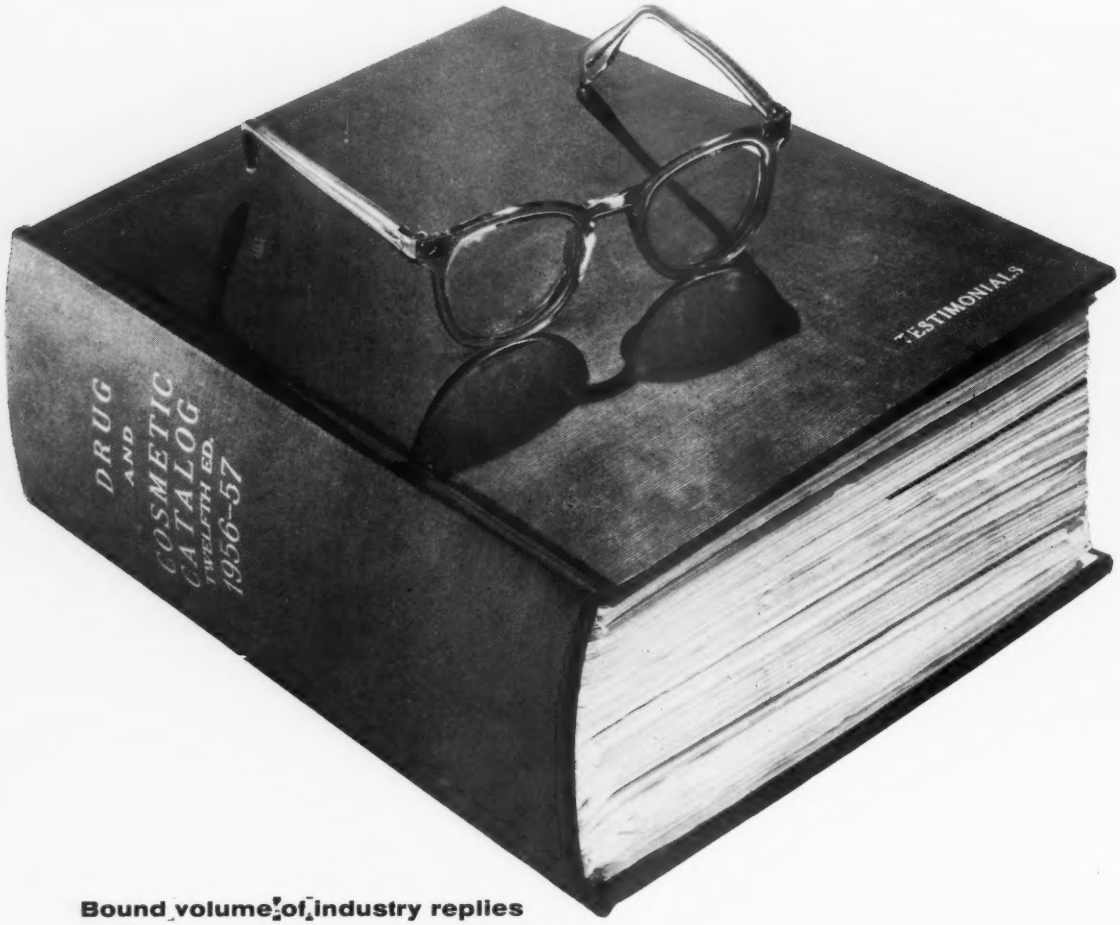
That's a conclusive answer to our question to leading executives in Drug and Cosmetic factories:—Do you use the Drug and Cosmetic Catalog regularly? Six hundred selected leaders were asked. 460 replied—all said YES.



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We would like to show you the letters

Drug and Cosmetic Catalog, published for 27 years, will soon appear in its 13th edition.

A complete directory—the only specialized one for this industry and packed with other useful information for buyers, chemists, plant men and other factory men—the new 1958-59 edition is now in process.

May we send you data on this valuable Drug and Cosmetic Industry advertising medium with an active, producing life of two years.

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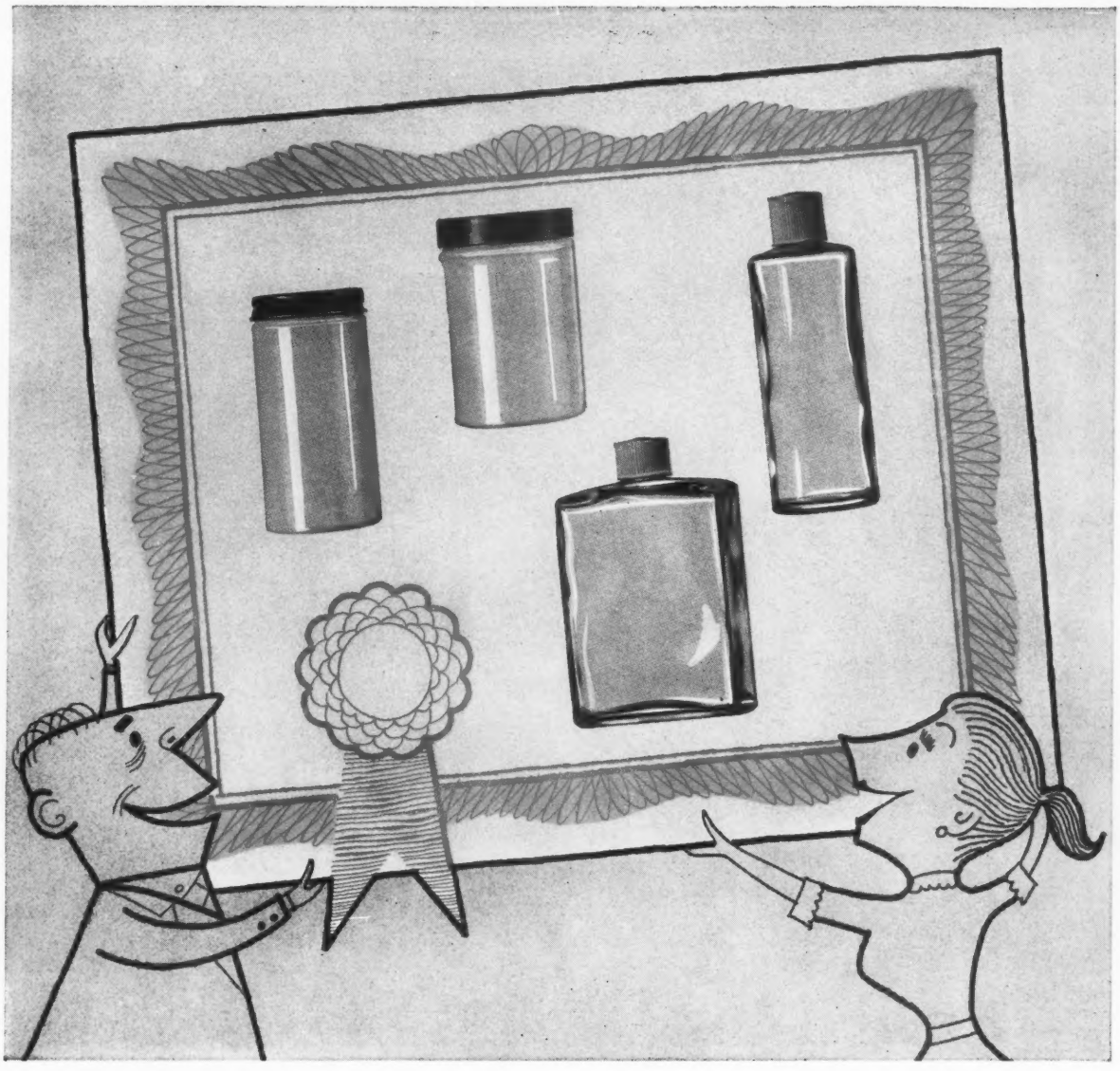

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The beautiful Hazel-Atlas line of *Stock* Cosmetic Containers makes a lasting bond between your product and the consumer. Beautiful... *yes!* And more — they are also practical. H-A Opal Jars are straight, light — strong, white. Gleaming white opal glass hides air-pockets. Straight-sided for easy filling. Save time and expense with distinctive H-A "Deco-fired" Cosmetic Labels and designs for flint or opal — economically applied in one or more permanent colors at the time of manufacture.

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THE ALL PURPOSE AEROSOL PERFUME ATOMIZER FOR THE PURSE

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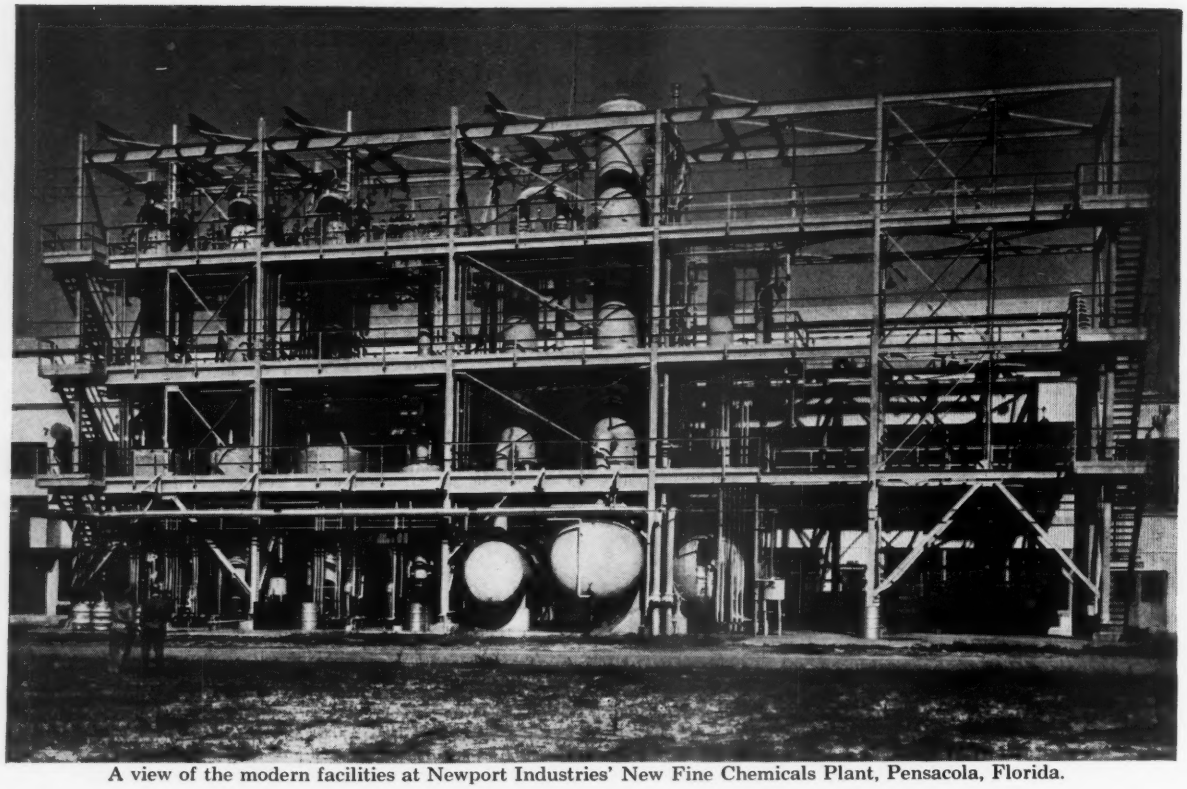

A view of the modern facilities at Newport Industries' New Fine Chemicals Plant, Pensacola, Florida.

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Newport Industries Company, a division of Heyden Newport, is the first large American manufacturer of synthetic menthol from native terpene sources. Newport's production facilities for menthol, menthone, thymol, and neomenthol guarantee you a stabilized market price and a continuous domestic source of supply.

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NEWS...

Bid Perfume Manufacturers Increase Retail Sales Aids

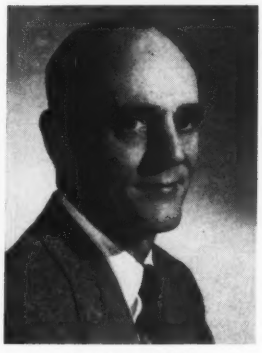
Perfume manufacturers are failing to provide retail sales outlets with adequate promotional support, according to Beauty Fashion Magazine's opinion survey of cosmetics department sales personnel. Still, 90 per cent of the salesgirls polled believe that perfume consumption is increasing.

Forty-six per cent of those questioned state that they are not kept informed on what perfumes are currently being advertised by manufacturers. Salesgirls also believe that more testers, more customer samples, increased cooperative advertising, and detailed product information would help to stimulate fragrance usage.

While 59 per cent reported that the quarter-ounce size is the most popular as a gift bottle, 71 per cent believe that they could sell more of the one-ounce size if given proper promotional support. And 72 per cent feel that the industry is not underestimating the market in its prices and sizes of perfumes and colognes.

The survey indicates that 93 per cent see the teen-age group as increasing in importance as fragrance customers and 83 per cent believe that interest in the use of fragrance in home is growing, and almost all believe that this interest can be stimulated.

Stressing the need for additional training for retail sales people, 95 per cent of the respondents believe that women do not get full enjoyment from fragrance because they do not apply and use it properly.



JOHN A. WELLS

PAUL G. I. LAUFFER

Merrell-National Labs Pres.

J. K. Lindsay has been elected president and general manager of Merrell-National Laboratories, overseas ethical drug division of Vick Chemical Company. E. L. Mabry, president of Vick, has stated that placing young men such as Mr. Lindsay, who is 34, in top divisional posts will strengthen Vick.

Mr. Lindsay succeeds E. P. Anderson who has held the post in conjunction with his duties as vice-president in charge of all Vick international operations. Mr. Anderson will now be free to devote all his time to expanding duties as an administrative vice-president of the parent Vick organization including domestic as well as international operations.

Chemway Int'l Gen. Mgr.

Eugene Anschel has been appointed vice-president and general manager of the International Division of Chemway Corporation, according to Charles T. Silloway, president of Chemway.

For the past five years Mr. Anschel has managed international activities for Nepera Chemical Company. He has also been associated with Schering Corporation in international sales.

P-M Sales Education Dir.

Robert H. Jacks has been named director of sales education by S. E. Ruch, general sales manager of Pitman-Moore Company.

Promotes Kuryloski, Wells

Eugene L. Kuryloski, marketing director of Merck Sharp & Dohme since 1955, has been appointed assistant director of sales and marketing, according to an announcement by Charles B. Pyle, director of sales and marketing, who also announced the appointment of John A. Wells as marketing and advertising director. Mr. Wells had served as advertising director since 1955.

Lauffer with Northam Warren

Paul G. I. Lauffer, Ph.D., has been appointed director of research for Northam Warren Corporation, according to Northam Warren, president. For over twenty-three years Dr. Lauffer was chief chemist for the George W. Luft Company in charge of production, control and research. Previously, he had held a similar post with Pinaud, Inc. for six years.

In his new position at Northam Warren Dr. Lauffer will be in charge of an enlarged staff of laboratory research personnel.

He received his bachelor degree from Washington and Jefferson College and did post graduate work at the University of Chicago and Columbia University. He spent a year at Columbia as Fritzsche Fellow on a research project on odor-structure relationships.

Dr. Lauffer is former chairman of the Scientific Section of the Toilet Goods Association and past president of the Society of Cosmetic Chemists, presently serving on the executive committee. He is chairman of the Symposium on Fragrance, American Society of Perfumers; a member of Phi Lambda Upsilon and Sigma Xi as well as the American Chemical Society and American Institute of Chemists.

Merck P R Director

John J. Horan has been appointed director of public relations of Merck & Co., Inc., it has been announced by John T. Connor, president. Thomas E. Jennings, formerly director of public relations, has been appointed to the new position of public relations counsel.

Mr. Horan represented the American drug industry at the World Health Organization General Assembly in Geneva, Switzerland, in 1953, and has been active in the Manufacturing Chemists' Association and the American Pharmaceutical Manufacturers' Association.

EUGENE L. KURYLOSKI

Clow and McAuliffe Named Vice-Presidents of Cyanamid

Allan B. Clow, formerly general manager of American Cyanamid Company's Farm and Home division, and Gen. Anthony C. McAuliffe, formerly general manager of the company's Engineering and Construction Division, have been named vice-presidents of Cyanamid, according to an announcement by Dr. W. G. Malcolm, president of the company.

Mr. Clow has been named vice-president for marketing, succeeding Dr. Malcolm, who became president of the company Sept. 1. General McAuliffe has been named vice-president for engineering and construction.

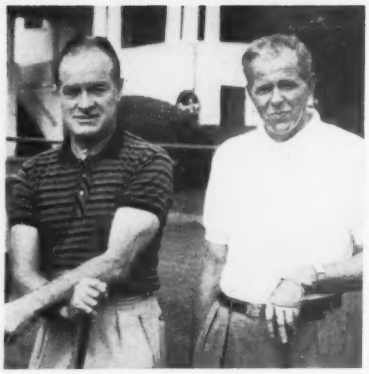
Mr. Clow joined Cyanamid in 1933 and subsequently held management positions in the Calco Chemical and Lederle Laboratories Divisions. In 1952 he was named executive director of Lederle and in 1954 general manager of the newly formed Fine Chemicals Division. When the company established its Farm and Home Division in January, 1957, he became its general manager.

General McAuliffe joined the company in May, 1956, upon his retirement as commander in chief of United States Army, Europe. Deputy commander of the 101st Airborne Division during World War II, he parachuted into France in 1944 and commanded the glider echelon of the 101st in the airborne invasion of Holland. He participated throughout the combat operations of the 101st, and during the Battle of the Bulge, in the absence of the division commander, commanded that division in the defense of Bastogne. From 1949 to 1951 he was chief of the Chemical Corps.

Mead Johnson Clin. Res. Dir.

Dr. Thomas C. Fleming has been appointed director of clinical research of Mead Johnson & Company, according to Dr. Ben King Harned, vice-president for research.

KENNETH G. VOORHEES



Comedian Bob Hope and Edward J. Breck, president of John H. Breck, Inc., at the start of a recent golf match in Springfield, Mass. The foursome included Leland Kalmbach, president of the Massachusetts Mutual Life Insurance Company, and S. Dwight Parker, president of the Springfield Fire and Marine Insurance Company. While results of the match were not disclosed, Mr. Hope was heard to mutter something about still being able to make a dollar in show business.

Denver Chem. Buys Wampole

Denver Chemical Manufacturing Company, New York, has completed arrangements for acquisition of Henry K. Wampole, Inc. Denver also owns Brace Pharmaceutical, Inc. and Hand Medicine Company.

Crown Cork & Seal V.P.

Karl W. Mueller has been elected a vice-president of Crown Cork & Seal Co., Inc.

Voorhees 25 Yrs. at Ungerer

Kenneth G. Voorhees, president of Ungerer & Company, has marked the twenty-fifth anniversary of his employment by the company. He joined the firm on Oct. 2, 1932, became executive vice-president in 1936 and president in 1949.

During his association with Ungerer, the company has grown continuously, including completion of a new manufacturing plant, modernization of the New York office and branch warehouse, and establishment of branch office facilities in Los Angeles and Toronto.

At a testimonial luncheon on Oct. 2, sponsored by his executive associates, Mr. Voorhees was presented with a gold watch in recognition of his twenty-five years service to Ungerer. Some 50 members of the Ungerer organization attended, including Ivon Budd and George Branigan, both of whom spoke briefly. Mr. Voorhees spoke encouragingly of plans for the future and envisioned continued expansion of company activities.

Baxter Makes Staff Changes

Raymond D. Hetterick, vice-president of Baxter Laboratories, Inc., has been placed in charge of all marketing and product development activities for the company, according to William B. Graham, president.

George Lake, field sales manager since 1956, has been appointed to a newly created position of general sales manager; Sam Parker, district manager of the Chicago and Central area, has been promoted to field sales manager; and James Darst, representative from the Houston territory, has been named new district manager of the Chicago area.

A. C. Dalton, recently transferred to the home office sales staff from the Cleveland, Miss., plant, has been appointed to the new sales staff position of market analyst.

Honor Marcel Billot

Marcel Billot, honorary president of Societe Technique des Parfumeurs de France and manager of Houbigant in France, was the guest of honor recently at a dinner at Le Chateau of the Hotel Savoy-Plaza. Hosts were the directors of the American Society of Perfumers and the French group known as Les Amis de Langue Francaise de la Parfumerie, under the co-chairmanship of Jean Martin and Pierre Bouillette.

W-C Director of Sales

Promotion of William N. Enes to director of sales of Warner-Chilcott Laboratories has been announced by Dr. Leonard A. Scheele, president. Mr. Enes, sales manager of Warner-Chilcott since 1956, previously served as manager of market research with the company.

Dr. Scheele has explained that Mr. Enes will be responsible for all sales activity in Warner-Chilcott's pharmaceuticals, as well as its Veterinary Medicine and Laboratory Supply divisions and Nepera Laboratories.

WILLIAM N. ENES

VERSATILITY

You can now obtain from Scovill without payment of fitting-up charges, several styles of either refillable or conventional type perfume pursers in a variety of metals and finishes. Or special variations of the basic containers can be worked out to your specifications. The versatile new refillable cases can accommodate a series of your different fragrances each in its individual refill unit to suit the consumer's whims of the moment... or they accept new refills of one particular fragrance without the messiness and loss of perfume associated with the usual "refillable" container. For distinctive cosmetic container work of all kinds consult: Scovill Manufacturing Company, Drug and Cosmetic Container Division, 99 Mill St., Waterbury, Conn.

SCOVILL Containers

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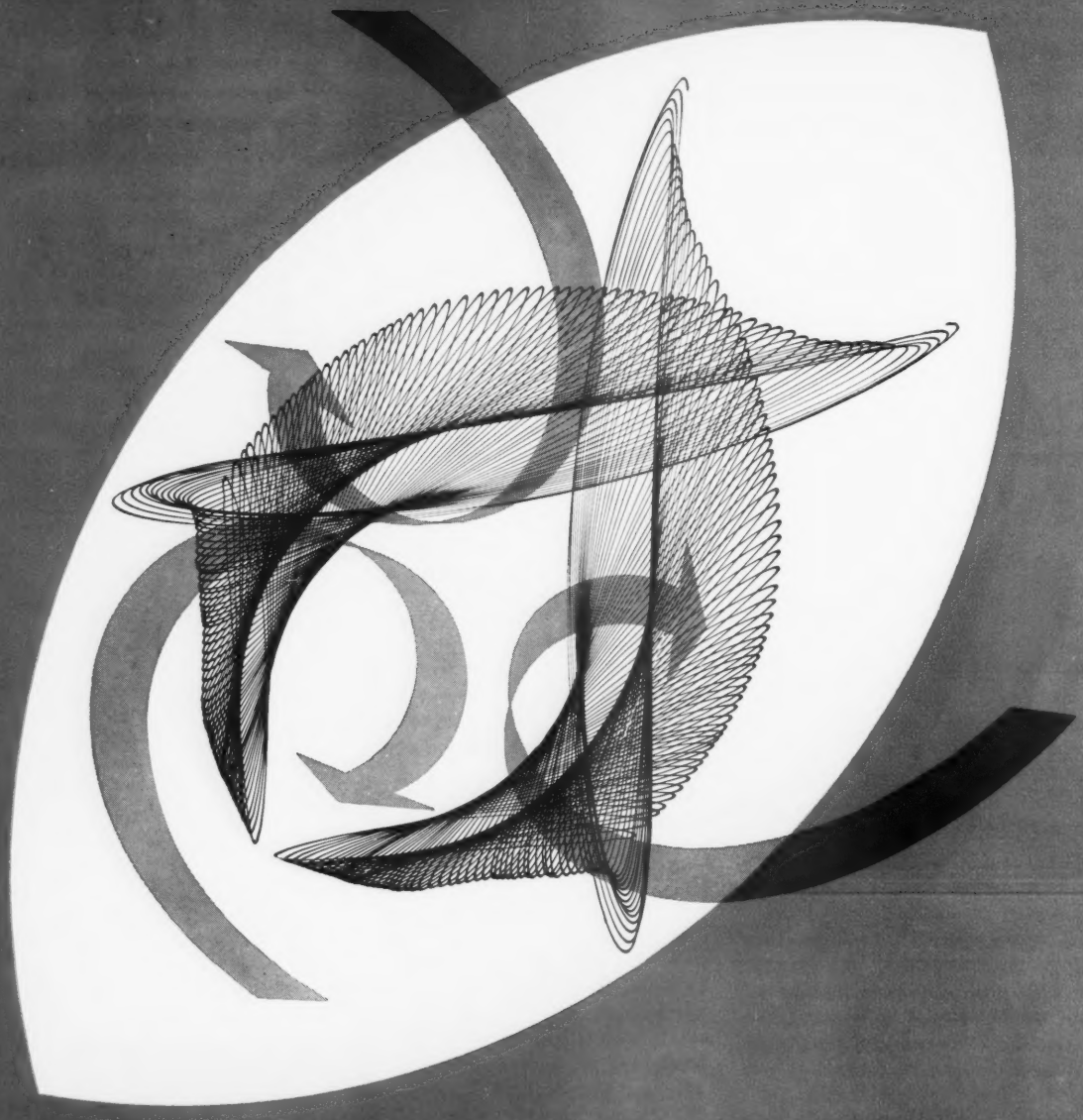

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DR. JACK NAGLER

Dunbar Product Devel. Dir.

Jack Nagler, Ph.D., formerly research director of Northam Warren Corporation, has been appointed director of product development of the Dunbar Laboratories Division of Chemway Corporation, it has been announced by William Russell, president of Dunbar.

Additional research laboratories for the development of proprietary drugs and toiletries are now being constructed at the new Mountain View facilities of Chemway for Dr. Nagler and his staff, according to Mr. Russell.

Lehn & Fink Int. Adv. Mgr.

Joseph A. Moran has been named advertising manager of the International Operations Division of Lehn & Fink Products Corporation, Dr. Edward Plaut, president of the firm, has announced.

Mr. Moran, formerly advertising supervisor of IBM World Trade Corporation, has also been affiliated with Foote, Cone & Belding and was radio-press attache to the United States Embassy in Havana, Cuba.

Fred Lascoff, left, accepts from Jack Chervenak, New York regional sales manager for E. R. Squibb & Sons, an engraved plaque commemorating the two million prescriptions filled by I. Leon Lascoff & Sons Apothecary. Presentation was made at the recent banquet climaxing Squibb's New York Summer sales conferences.

Fragrance Found. Election

H. Gregory Thomas of Chanel, Inc. was elected September 17 to a one year term as president of the Fragrance Foundation, succeeding Jean Despres of Coty Inc. The following officers were re-elected for one year terms:

Vice-presidents, Bernard d'Escayrac of Guerlain, Inc., Pierre Harang of Houbigant Sales Corp., and Frazer V. Sinclair of Beauty Fashion Magazine; secretary, A. L. van Ameringen of van Ameringen-Haebler, Inc.; and treasurer, Joseph A. Danilek of Mary Chess, Inc.

Mr. Despres was elected director for a three year term, and Paul Martinot of Caron Corp., for a two year term. Elected directors for one year terms were: Charles Bryan of Firmenich and Co., Inc.; Ernest R. Durrer of Givaudan-Delawanna, Inc.; Jack Mohr of Park and Tilford Toiletries Division; Charles Granville of Angelique; and Owen Stoner of Prince Matchabelli.

Elected previously and remaining on the board are: Paul Carey of Tussy Cosmetiques, Inc.; Edouard Cournand of Lanvin-Parfums, Inc.; Henri Costerg of Les Parfums de Dana, Inc.; Davis Factor of Max Factor and Co.; Oscar Kolin of Helena Rubinstein and Co.; Charles Pennock of Richard Hudnut; Russel Rooks of Avon Products, Inc.; F. E. Shoninger of Antoine Chiris, Inc.; Benson Storfer of Parfums Corday, Inc.; and J. S. Wiedhopf of Roure-Dupont, Inc.

Automatically on the board according to by-laws is S. L. Mayham, executive vice-president of the Toilet Goods Association.

Promoted by Parke-Davis

L. E. Johnson has been named director, branch house operations for Parke-Davis; Fred H. Thistlethwaite will assume additional responsibilities as sales coordinator; and A. N. Sorenson has been named manager of professional and retail promotion, according to an announcement by Graydon L. Walker, vice president and director of U. S. and Canadian sales and promotion.

Hixson Joins Science PR

Joseph R. Hixson has joined Science Public Relations, Inc., as an account executive. With the Medical & Pharmaceutical Information Bureau, a division of Science Public Relations, from 1951 through 1955, Mr. Hixson has been manager of pharmaceutical public relations for Chas. Pfizer & Co., Inc.

Secretary of Commerce Sinclair Weeks, left, visiting the Arthur Colton Company exhibit at St. Erik's Fair in Stockholm, Sweden, receives from Kenneth B. Hollidge, Colton executive vice-president samples of peppermint candy tablets made on a Colton tablet press at a rate of 1,150 per minute.

Norwich Veterinary Dir.

Harold D. B. Roberts, V.M.D., has been named director of the newly created division of veterinary medicine of The Norwich Pharmacal Co., William B. Stillman, Ph.D., administrative research coordinator, has announced. Veterinary activities, now under the scientific department, were formerly part of the medical division.

Martin-Valer's New Location

Martin-Valer Consultants have moved to new and larger quarters at 23-25 East 26th Street, New York 10. Telephone: ORegon 9-8958.

Holdman in New Post

Ernest E. Holdman has been named vice-president and general manager of Heyden Newport International, a newly formed division of Heyden Newport Chemical Corporation which will be responsible for handling export sales of both naval stores and chemicals and will have sales offices in principal cities throughout the free world, Simon Askin, president of Heyden Newport, has announced.

ERNEST E. HOLDMAN

WAVEMASK 30

works magic with home permanents

The new Synfleur fragrance WAVEMASK 30 can help cure even your most difficult case in home permanent formulation.

WAVEMASK 30, based on essential oils and aromatic chemicals, carefully tested for stability, compatibility and solubility, is an artistic formulation developed out of long and intensive Synfleur research.

In practical application, it has proven itself as practically a panacea to cold wave preparation odor problems. Additionally, it can be adapted as a basic fragrance for effective use in other thioglycolate products requiring similar masking treatment.

The Synfleur laboratories staff will be glad to assist you on your masking problems with samples, data or other help, without obligation.

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Brunelli Joins Chemway

Vincent P. Brunelli has been elected a vice-president of Chemway Corporation, Charles T. Silloway, president, has announced. Mr. Brunelli has been associated with Johnson & Johnson for several years, most recently as vice-president and general manager of its subsidiary, LePage's Glue Company.

VINCENT P. BRUNELLI

Mr. Silloway also has announced the appointment of Mr. Brunelli as president of a new household products division which will be composed of the company's horticultural subsidiary, The Carac Corporation, and its Larvex Division.

Walsh on Patch Board

Professor Robert A. Walsh has been elected to the board of directors of The E. L. Patch Company, filling the vacancy created by the recent death of Ralph R. Patch, according to an announcement by Fred A. Lawson, president of the company.

Professor Walsh has been affiliated with the Patch Company since 1944, when the company retained him as consultant while he was teaching at Massachusetts College of Pharmacy, his Alma Mater. In June, 1953, he relinquished his teaching post to become director of research and product development for the Patch Company. He continues to be associated with the college as Professorial Lecturer in Professional Relations and Public Health.

35 Years with Merck

David R. Brown is celebrating completion of 35 years of service with Merck & Co., Inc. He began working for Merck Sept. 11, 1922 in the firm's warehouse office. In 1928 he was transferred to the sales department and now serves as office sales representative in the medicinal accounts sales department.

Shulton Fine Chem. Mgr.

William O'Brien, vice president-finance of Shulton, Inc., has been named manager of the firm's Fine Chemicals Division in addition to his responsibilities for the over-all guidance of the company's financial affairs, George L. Schultz, president, has announced. Mr. O'Brien succeeds Richard Brainard who will assume responsibility for the company's real estate and business acquisition program.

Joining Shulton in September, 1953 as assistant controller, Mr. O'Brien became controller and assistant treasurer in July, 1954, and was elected a vice-president last May.

Onyx Research Appointees

Drs. Giuliana C. Tesoro and Morton B. Epstein have been named to new research staff positions at Onyx Oil & Chemical Co., F. O. Robitschek, company president, has announced.

Dr. Tesoro, who moves from assistant director of research to associate director of research, received her Ph.D. degree from Yale University in 1943. After working for one year as a research chemist with American Cyanamid, she joined the staff of Onyx Oil & Chemical Co.

Dr. Epstein has been promoted to assistant director of research. He earned his Ph.D. at the University of Illinois in 1942. He joined Onyx in 1954.

Fougera, Varick Move

E. Fougera & Company, Inc. and Cardiovascular Division and the Varick Pharmacal Company, Inc. have announced opening of new offices and plant on Cantiague Road, Hicksville, Long Island, N. Y.

Maurice Maubert, president and general manager of P. Robertet & Cie, Grasse, France, parent company of P. Robertet, Inc. of New York, has been named to the rank of chevalier in the French Legion of Honor on the basis of his achievements in the field of essential oils.

Hensley Is Toni President

Stuart K. Hensley, formerly executive vice-president of The Toni Company has been elected president and chief executive officer of Toni to succeed R. Neison Harris, founder and formerly president of the company. Mr. Harris will be the Gillette Company vice-president responsible for the overall operations of both the Toni and Paper Mate divisions and will continue to be president and chief executive officer of The Paper Mate Company.

STUART K. HENSLEY

Mr. Hensley joined Toni in 1946 as a sales representative in Florida, following service in the U. S. Navy. He became in turn divisional manager, regional manager and general sales manager. In 1952 he was named vice-president in charge of sales and six months later assumed responsibility for advertising and brand promotion. He became executive vice-president a year ago.

Parke, Davis Toronto Mgr.

Luther M. Budd has retired as Toronto branch manager for Parke, Davis & Company, Ltd., and Arthur W. Speed has been appointed as his successor.

A native of Cobourg, Ontario, and a graduate of the University of Toronto, Mr. Budd received his pharmacy degree at the University of Michigan. Following several years in retail pharmacy, he joined Parke-Davis in 1928 at Walkerville, Ontario, as a medical service salesman. In 1954 he was appointed manager of the Toronto branch.

Born in Winnipeg, Manitoba, Mr. Speed was graduated from the University of Manitoba in 1938. After several years in retail pharmacy, he joined Parke-Davis in 1945 as a sales representative in the Walkerville branch. In 1955, he became Toronto field manager. At the start of World War II, Mr. Speed enlisted as a pilot in the RCAF and was discharged as a squadron leader in 1945.

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Ideas come, of course, when they're good and ready and often they show up at odd times and places. Most research men find, however, that a little stimulation helps, and the best stimulator is a mental file of facts and information.

This technical booklet provides such facts in readily digestible form. It also acts as a ready reference on polyethylene glycols, products uniquely adaptable to hundreds of uses, both as intermediates and as compounds in their own right.

Incidentally, whether or not you use polyethylene glycols at present, order a copy today for your personal file.

YOU CAN DEPEND ON DOW

Left to right: Dudley Dunlop, Mallinckrodt Chemical Works; Edward Plaut, president of Lehn & Fink Products Company; Jack Reiner, guest of honor; and S. L. Mayham, executive vice-president, Toilet Goods Association, toastmaster.

Jack Reiner Honored

John J. (Jack) Reiner, who has retired after fifty years of service with Lehn & Fink Products Company, was the guest of honor at a luncheon given on September 24 to mark his retirement. September 25 was Mr. Reiner's 68th birthday. Born in 1889, he joined Lehn & Fink in 1907, became a member of the company's purchasing department in 1920 and was director of purchasing for Lehn Fink from 1920 until his retirement.

The luncheon was arranged by suppliers and associates with whom Mr. Reiner had become intimately acquainted over the years. More than 100 were in attendance.

CSC Opens Atlanta Office

Commercial Solvents Corporation has announced the opening of a new corporate district office with headquarters at 344 Williams Street, N.W., Atlanta. T. Austin Young has been appointed district manager of the new office.

T. AUSTIN YOUNG

Gets APMA Study Grant

Paul Dohl, attorney in the legal department of The Norwich Pharmacal Co. since 1952 and radio announcer for various stations in Norwich and its vicinity, has received an award from the American Pharmaceutical Manufacturers' Association consisting of a fellowship for one year at New York University.

Mr. Dohl will study in the field of trade regulations as well as food and drug law, working toward the degrees of master of laws and doctor of juridical science. He will continue his present duties in Norwich's Export Division, located in the firm's New York City office.

Catalin Corp. Director

Paul A. Murphy has been elected a director of Catalin Corp. of America. He is associated with Cyrus J. Lawrence & Sons, stock brokers.

EDWIN C. ABRAHAMSEN

Abrahamsen Retires

Edwin C. Abrahamsen, vice-president and plant manager of Burroughs Wellcome & Co. (U.S.A.) Inc., has retired after 26 years service with the company.

Vick Director of Personnel

William P. Jeffery Jr., vice-president of Vick's Matchabelli-Seaforth Division, has been appointed director of personnel for the Vick Chemical Company, a position formerly held by Richard D. Waters, Vick vice-president, who was recently elected president of Hess & Clark, another Vick division.

Crookes-Barnes Sales Mgr.

William E. Widerkehr has been named sales manager of Crookes-Barnes Laboratories, it has been announced by Edmund R. Beckwith Jr., president. Mr. Widerkehr has been associated with Warner-Chilcott Laboratories of Morris Plains as a regional sales supervisor.

Robins Clinical Researcher

Dr. Robert H. Jordan has been appointed an associate director of clinical research for A. H. Robins Company, Inc.

In Hornsby, a suburb of Sydney, Australia, Kolmar (Aust.) Pty. Ltd. has erected a plant, office and laboratory. Managing director is Leslie L. Hall who commenced Kolmar operations in Australia seventeen years ago. The plant is staffed with four chemists, including W. P. Burger, who was chosen from the American firm, Kolmar Laboratories, Inc.

Vitamins in Pharmaceuticals

A REPORT

Use of Biotin in Multivitamin Formulae

Biotin, now firmly established as an important member of the vitamin B complex, belongs in multivitamin formulae and dietary supplements for the reasons given below.

D-biotin is required for the growth of many organisms: animals, plants, bacteria. It appears to be related to the process of cell development. Symptoms of deficiency have been shown to occur in human beings who live on diets high in raw egg white.

Deficiency symptoms appear as severe dermatitis lesions, similar to seborrheic dermatitis and a desquamating disease of infants called Leiner's disease. These symptoms, when due to a deficiency of biotin, disappear after its administration. In animals, dermatitis, loss of hair, cessation of growth of the young and sudden death of the adults may occur.

Nearly 200 papers directly related to biotin research are in the literature. The work of investigation continues.

The evidence now available points to the need for biotin in multivitamin and dietary supplements which, by their very nature, are prescribed for therapeutic and prophylactic effect.

The Place of Biotin in Antibiotic Therapy

Rat feeding experiments using some of the sulfonamides show that the animals develop biotin deficiency. The same result has been found and reported from the use of antibiotics. It has been assumed that the same development might occur in man when this therapy is used. Under the circumstances, biotin should be included in stress formulae and in multivitamin supplements which are prescribed so often during and after the administration of these modern drugs.

Usage in Veterinary Medicine

In dogs and dairy calves it has been found that a deficiency of biotin will cause a paralysis of the hind quarters. This condition was cured by the administration of the vitamin. In chicks and turkey poults a biotin deficiency, represented by a dermatitis of the feet, may be overcome by the use of biotin in the feeding formula. A substantial increase in hatchability was found when hens were fed a ration known to be rich in d-biotin.

This evidence indicates that biotin has a definite place in veterinary medicine and animal nutrition.

Technical Data

Empirical Formula ..... $C_{10}H_{16}O_3N_2S$

Molecular Weight 244.3

Slightly soluble in water and 95% alcohol. Insoluble in ether, acetone and ethyl acetate. Soluble in d-panthenol.

Thermostable in dry crystalline form.

Not sensitive to light.

Not affected by reducing agents that may be present in polyvitamin and other pharmaceutical preparations.

The brilliant Roche synthesis of 1946 makes biotin readily available in pure form at a relatively modest cost.

Roche, a world leader in vitamin research and production, has a wealth of information about biotin. Skilled technical people are ready to help you incorporate biotin 'Roche' in your preparations.

New Edition of Brochure

Send now for your personal copy of the Roche technical brochure about d-biotin. Second edition is now available, complete with survey of recent literature and up-to-date bibliography. Ask your Roche salesman or write the Vitamin Division, without obligation.

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Seth U. Shorey of Monsanto Chemical Company, right, receives the first C. P. Seaverns Memorial Trophy from Hart Harris Jr. of S. B. Penick & Company at September golf outing of the BIMS of Boston. The trophy is dedicated to the memory of C. P. Seaverns, who joined Howe and French in 1889 and was president of the company from 1904 until his death in 1956. Mr. Seaverns was a charter member of BIMS of Boston. Other prize winners at the outing were F. J. Hailer of Rexall Drug Company; Charles Doherty of H. P. Hood & Sons; Harry Morgan of Sterwin Chemicals; and Joseph McGillicuddy of Howe and French.

W-C Personnel Mgr.

James E. Rehlaender has been appointed personnel manager of Warner-Chilcott Laboratories, according to Dr. Leonard A. Scheele, president. Mr. Rehlaender was formerly personnel manager for the William S. Merrell Pharmaceutical Co.

He will also be responsible for personnel of the administrative headquarters of Warner-Lambert Pharmaceutical Company.

Emerick Gets Seattle Post

Charles J. Emerick has been appointed to the post of Seattle division manager for Schering Corporation. He was formerly Kansas City division manager.

Morgan Joins Dragoco

Eugene E. Morgan has joined the perfume department of Dragoco, Inc. He was formerly with the Colgate-Palmolive Company for eight years.

EUGENE E. MORGAN

O'Connor is DCAT Head

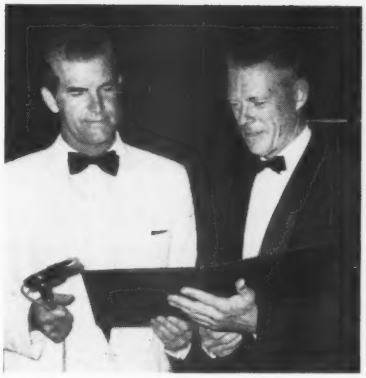
W. Boyd O'Connor, president of the Ayerst Laboratories Division of the American Home Products Corporation, was elected chairman of the Drug, Chemical & Allied Trades Section of the New York Board of Trade Sept. 21 at the section's 67th annual meeting at Galen Hall, Wernersville, Pa. He succeeds J. David Hayden, Eastern sales manager of the R. P. Scherer Corporation, who was chosen as the section's representative to the parent board of directors. Mr. O'Connor, a member of the executive body since 1950, has served as chairman of several committees.

Other officers named are: vice-chairman, Ralph A. Clark, vice-president of the J. T. Baker Chemical Co.; treasurer, William W. Huisking, vice-president of Chas. L. Huisking & Co., Inc.; counsel, William J. Quinn, of Merck & Co., Inc.; and secretary, Miss Helen L. Booth.

Named to the executive committee were Norman C. Babcock, vice-president of the Union Carbide Chemicals Co.; Fred A. Coe, Jr., vice-president of Burroughs, Wellcome & Co. (U.S.A.) Inc.; John A. Ewald, president of Avon Products, Inc.; William J. Schieffelin III, vice-president of Schieffelin & Co.; F. M. Schwemmer of White Laboratories, Inc.; Paul E. Weber of Chas. Pfizer & Co., Inc.; and John E. Zacharias of McKesson & Robbins, Inc.

These members of the executive committee were elected for three-year terms, and Mr. Schieffelin and Mr. Schwemmer were reelected. Members carrying over on the committee for one or two years are: E. D. Bowes, Kimble Glass Company; Paul J. Cardinal, Hoffmann-La Roche; Griffin Crafts, J. W. Wilson Glass Co.; James Day, The Dow Chemical Company; Dr. Charles E. Dutchess, consultant; Harrison S. Fraker, Topics Publishing Company; W. T. Halsted, Thos. Leeming & Co.; Louis E. Kalty, Progressive Drug Co.; George H. McGlynn, Magnus, Mabee & Reynard; Leon W. Miller, Barrett Division, Allied Chemical & Dye Corporation; James A. Singmaster Jr., Monsanto Chemical Company.

Elected to the honorary membership of the DCAT executive committee was James G. Flanagan, vice-president of S. B. Penick & Co., who has served DCAT as its counsel and chairman of its legislative committee for the past eight years, and Fred G. Singer, retiring duPont executive, who has been chairman of the section's tariff committee since 1950 and a member of the executive group since 1947.



William G. Mennen Jr., right, accepts the American Legion's Sports Award for 1957 from Dan Daniels, National Commander, before an audience of Legionnaires at the Atlantic City Turner-Akins bout. The award was in recognition of the support that The Mennen Company has given to sports during the year, particularly in outboard racing and boxing.

Joins Polak's Frutal Works

Marketing and sales promotion for Polak's Frutal Works Inc. will be the responsibility of Kurt Altschul whose appointment to Polak's sales organization has been announced by Bernard Polak, president of the firm. Mr. Altschul, recently returned from an extended study of Polak's associate plants in Holland and England, has had ten years experience in sales management.

In planning and implementing marketing and sales development programs for Polak's, Mr. Altschul will work closely with the firm's E. Vles, and for the present will concentrate his efforts on the East Coast area.

Del Torto Joins Roche Labs

Richard Del Torto has been appointed administrative assistant to Dr. V. D. Mattia Jr., director of medical information for Roche Laboratories. Mr. Del Torto has previously been administrative assistant to the medical director of Shenley Laboratories and has held the same position at Pfizer Laboratories.

RICHARD DEL TORTO

Burroughs Wellcome Appoints

Charles H. Pressel, formerly production manager of Burroughs Wellcome & Co (U.S.A.) Inc., has been appointed plant manager, and G. Henry Leslie, formerly assistant production manager, has been appointed production manager.

Charles H. Singler, formerly assistant advertising manager, has been appointed assistant sales manager, and Clifford A. Parish, formerly in charge of direct mail, has been appointed assistant to the advertising manager, in charge of copy.

New Pvt. Label Firm

A new firm organized to band two-piece hard shell gelatin capsules has commenced operations, according to a spokesman for Nyscoseal, Inc. of Long Island City.

The banding process consists of placing a gelatin seal around the seam of the capsule. This service is available for capsule sizes #0, 1, 2, 3 and 4. The finished capsules can also be imprinted with a trade-mark or insignia after sealing.

The process is now available to all pharmaceutical firms for the first time in the private formula field, according to the company. The advantages claimed for this sealing process are longer shelf life for many products, especially vitamins, due to the protection it affords from oxidation; positive identification of a product; and the multi-colored combinations that are available. Practically any color band is available, and together with a two-tone capsule, 3 colors can be made in a single capsule.

In the timed disintegration field of medication, there is positive sealing of both halves of the capsules, and separation is now impossible. In powder-filled capsules, there can be no dusting of capsules due to seepage of powder. Also odor, especially in liver preparations can be practically eliminated.

Vick Communications Mgr.

Thomas M. Wolff has been appointed to the newly created position of communications manager of Vick Chemical Company, E. L. Mabry, president, has announced.

Mr. Wolff, a management consultant with Industrial Relations Counselors Service, Inc., for the last four and a half years, will be responsible for helping Vick and its nine operating divisions with their public relations, community relations and employee communications.

CHARLES H. PRESSEL

JOHN L. REID

Colton Sales Engr. for N.Y.

John L. Reid has been appointed sales engineer in the New York District Office of Arthur Colton Company, W. A. Doepel, sales manager, has announced. A 1951 chemical engineering graduate of Worcester Polytechnic Institute, Mr. Reid has been a production supervisor for Merck and Co. Inc., design engineer for the Bakelite Division of Union Carbide Company, and a sales engineer in West Orange, N. J.

Charles W. Crawford

Charles W. Crawford, U. S. Commissioner of Foods and Drugs from 1951 to 1954, died in San Francisco on Sept. 15. Mr. Crawford, who was 68 years old, was the last head of the Food and Drug Administration who could be traced back to the time of Harvey Wiley. When the present Food, Drug and Cosmetic Act was being steered through Congress from 1933 to 1938, Mr. Crawford was the legislative representative of the FDA and was in charge of the bill so far as the FDA was concerned.

Morris Katzman

Morris Katzman, president of Process Chemicals Company and chairman of the board of Pilot California Company, died Aug. 29 in Los Angeles at the age of 52.

Benjamin Tappen Fairchild

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George Fontaine

George Fontaine, 67, former vice-president of the Chattanooga Medicine Company, died on Sept. 13. He had been with the company 48 years when he retired in March, 1955.

James C. Kennedy Jr.

James C. Kennedy Jr., 66, executive vice-president of Schieffelin & Co., for nine years prior to his retirement in 1954, died Sept. 19 at his home in Quogue, Long Island. He had been a member of the Schieffelin board from 1931 until his retirement. From 1918 to 1929 he was vice-president of the Forhan's Tooth Paste Company.

Surviving are his widow, Mrs. Margaret McNulty Kennedy; two sons, Donald and Alan; two daughters, Mrs. John H. Winters and Mrs. Harry N. Moore; a brother, a sister and twelve grandchildren.

Hugh Reynolds MacMillan

Hugh Reynolds MacMillan Jr., 53, a vice-president of manufacturing and director of Colgate-Palmolive Company, died Oct. 6 of a heart attack at the Baltusrol Country Club in Springfield, N. J., while preparing to play in the club's golf tournament.

He is survived by his wife, Mrs. Mary Lee Lipscomb MacMillan; his mother, Mrs. Laura Seckler MacMillan; his son, Robert Hugh; his daughter, Betsy Ann; and three brothers.

Ralph R. Patch

Ralph R. Patch, 75, chairman of the board of E. L. Patch Company and former member of the executive committee of the American Drug Manufacturers Association, died Sept. 18 in Stoneham, Mass.

Warren Roberts

Warren Roberts, president of the S.S.S. Company from 1941 through 1955, and chairman of the board until his retirement on July 5 of this year, died Sept. 14.

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Graphic arts
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Agricultural chemicals

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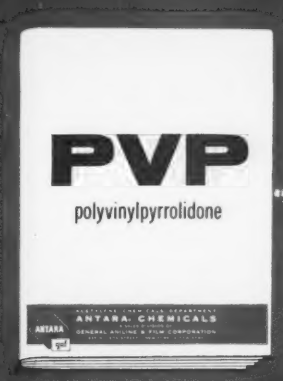
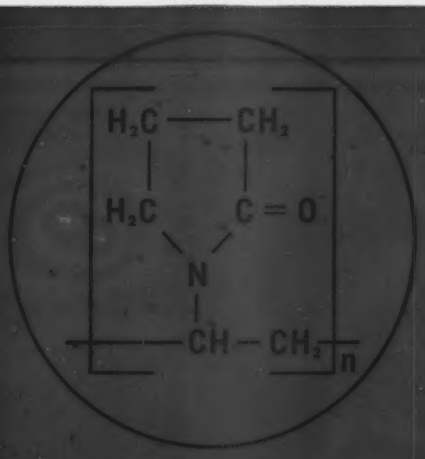


PVP

(polyvinylpyrrolidone)



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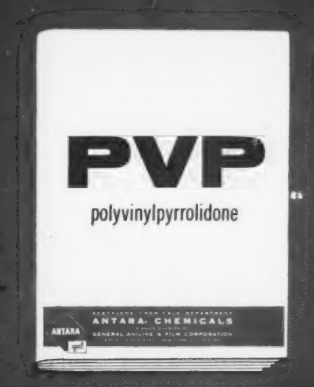

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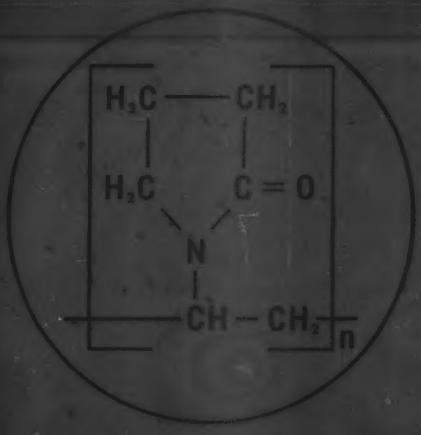

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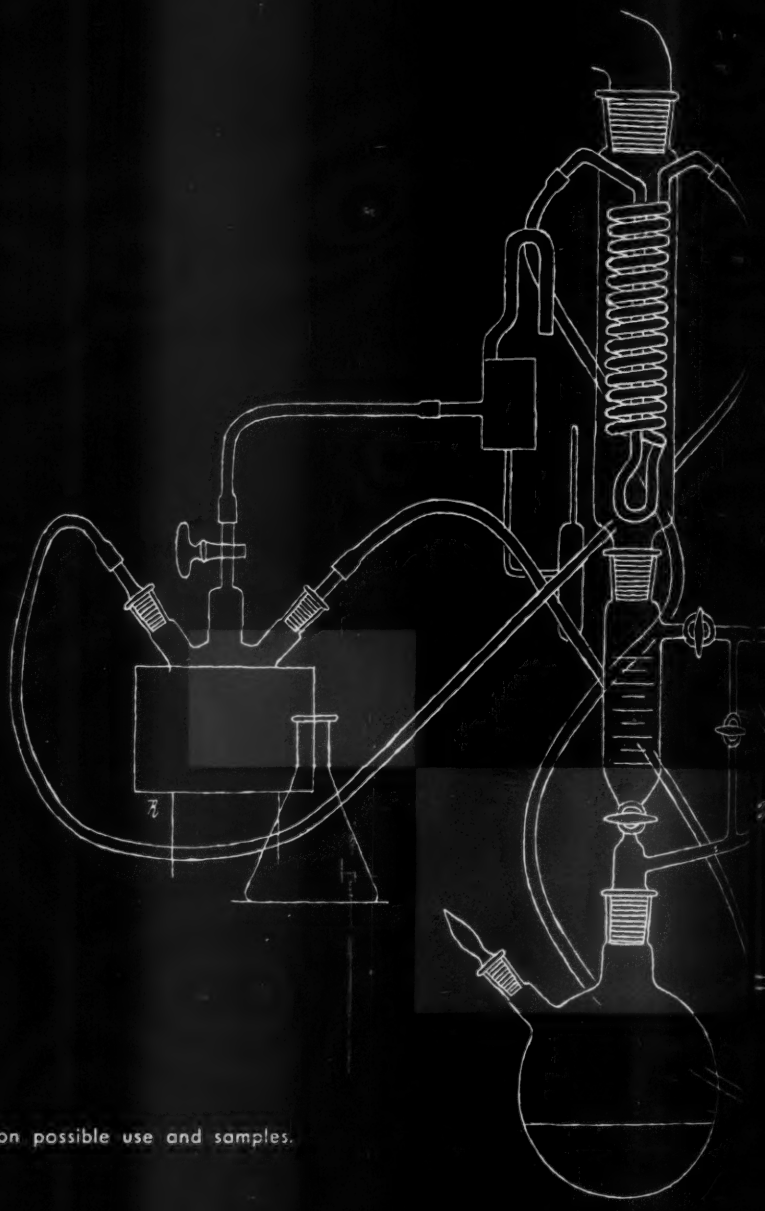

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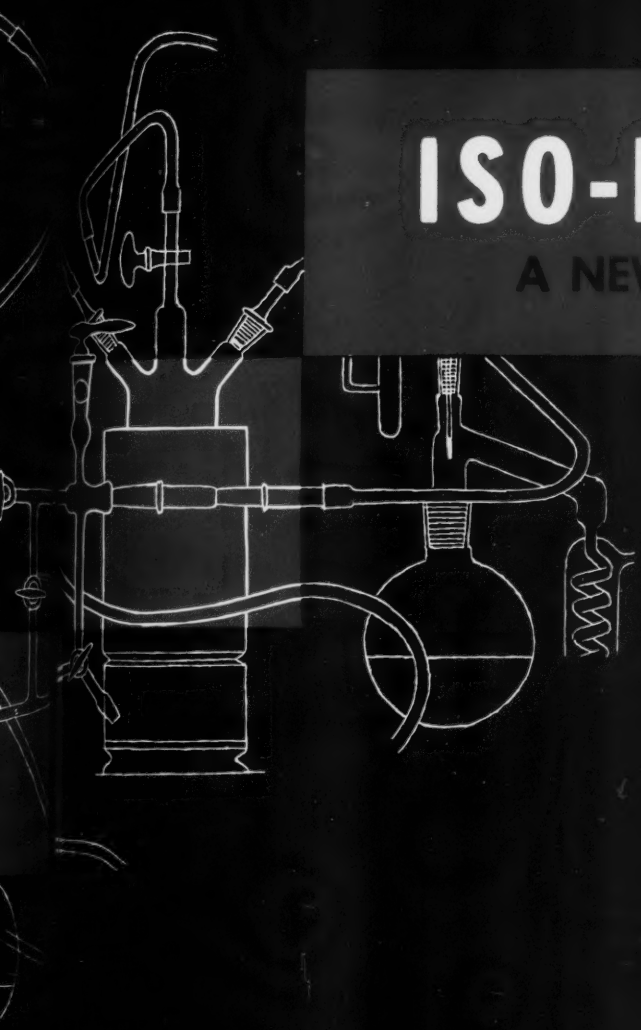

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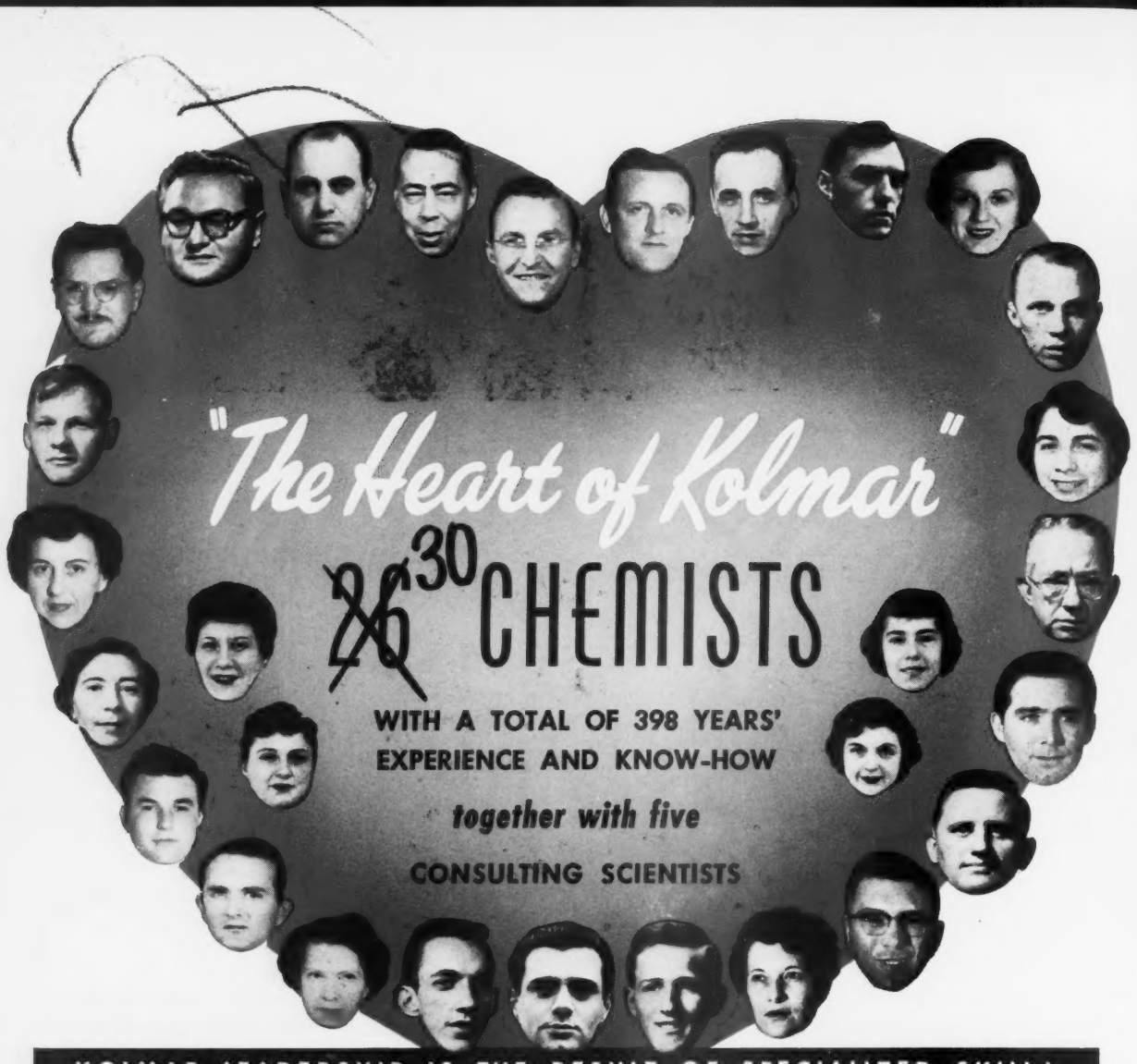
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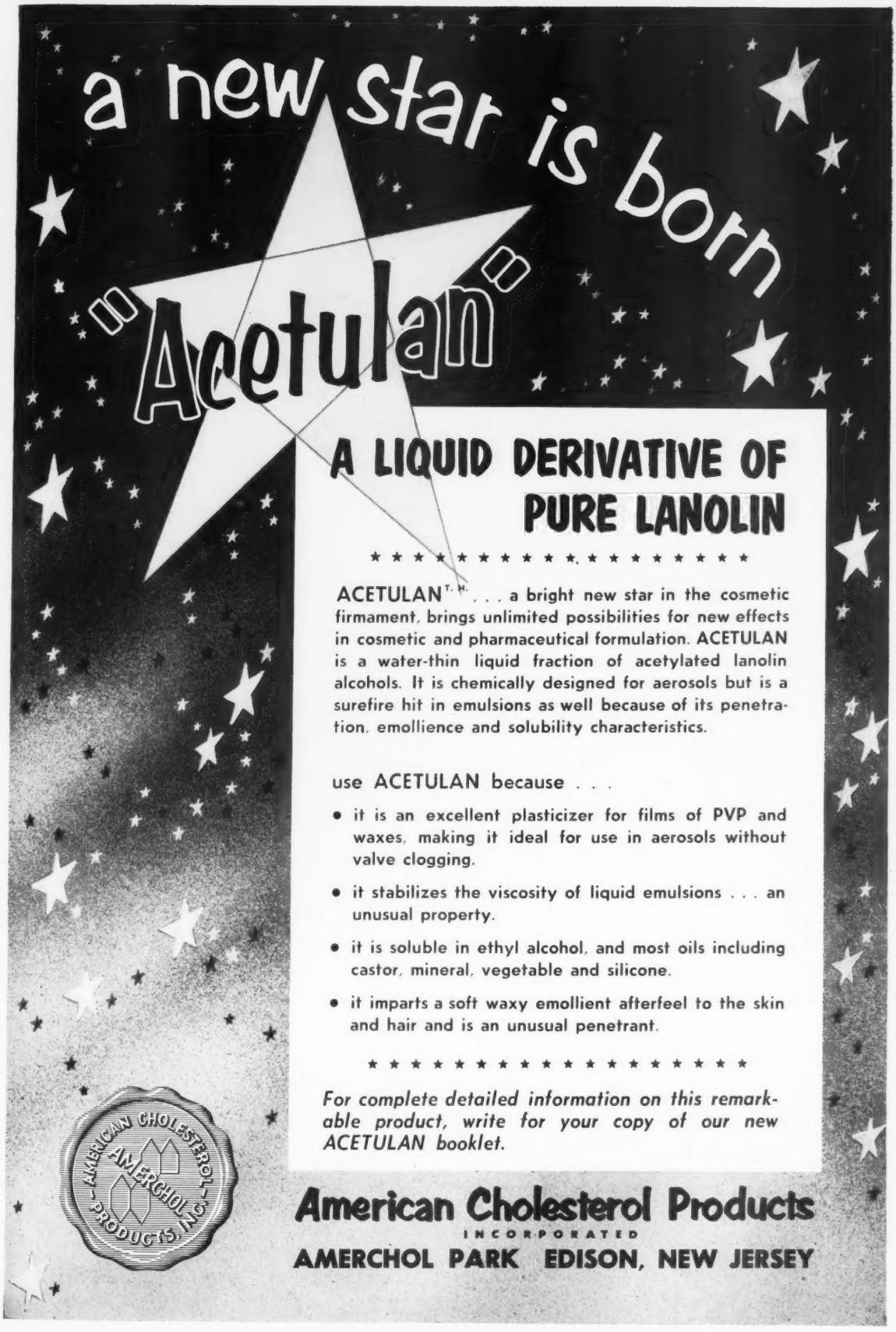

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- it is an excellent plasticizer for films of PVP and waxes, making it ideal for use in aerosols without valve clogging.
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Fussy buyers (there's one born every minute) say, "don't all aerosols go 'pfft'?" Rhodia can help you satisfy the fussy customers' drive to be especially different. A Rhodia scent can give your aerosol cologne or perfume the product value that keeps the package sold. Specifically, Rhodia can make a cologne or perfume compound compatible with any aerosol design, propellent or container material. But even more important for the long competitive push, Rhodia can deliver the scent that stands out in fragrance, feel and stability.

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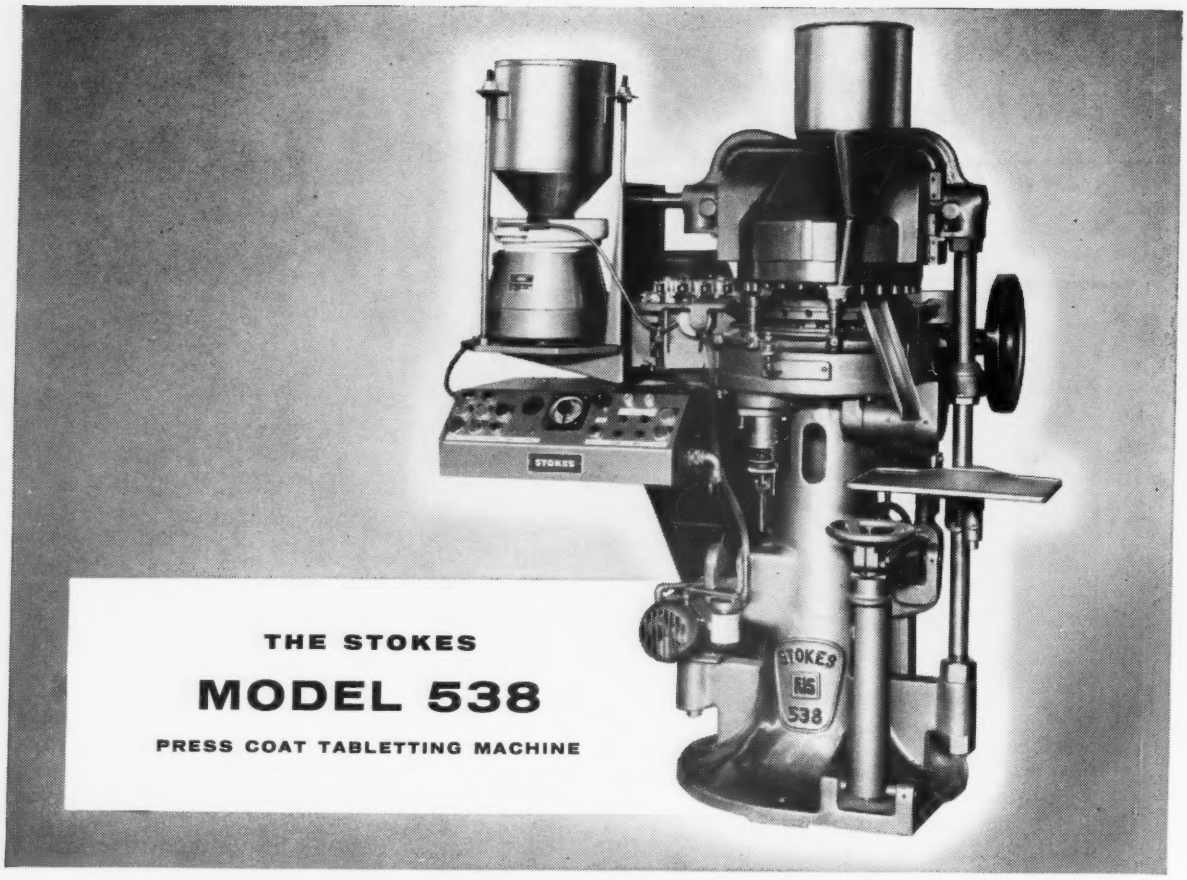

Production-proved by leading pharmaceutical manufacturers

All the superior features of Stokes Press Coat Tabletting Machines would fill pages—but proof of superior performance is verified by the fact that leading pharmaceutical manufacturers *everywhere* rely on Stokes for fast, accurate tablet-within-a-tablet production.

Continuous Stokes research and development—*planned and executed in the light of manufacturers' needs*—have fostered continuous improvements in machine design. One universal vibrating feed bowl and feeder tube enables constant core tablet supply and permits broad flexibility in handling all types of cores. The Stokes Model 538 is the *only* press coating machine that will handle capsule and other special shaped tablets. Adaptation to various size and shape cores is simple and inexpensive. Improved feeder design and transfer linkage assures smooth operation and positive core placement at higher speeds.

A positive inspection system rejects any coreless tablets that might be produced. Machine can be controlled to shut down automatically in event the supply of either core tablets or coating granulation is insufficient.

Stokes Model 538 press coat tabletting machines are producing at rates up to 750 tablets per minute—handling a wide range of core sizes and shapes, and press coat sizes and shapes, with plain or embossed finishes. Centralized controls are simplified and conveniently located—require minimum operator training and attention.

Join those who already rely on Stokes for top production facilities. Stokes consultation service will assist in all your tabletting problems, even to formulation assistance. Write for further information—or contact the nearest Stokes field office.

Pharmaceutical Equipment Division
F. J. STOKES CORPORATION
5500 Tabor Road, Philadelphia 20, Pa.

STOKES

Management Forum

by Francis Chilson
INDUSTRIAL CONSULTANT

Handling Visitors

It is a mistaken policy in my opinion for large companies to combine, for the sake of saving a few dollars, the duties of receptionist and telephone operator. The visitor, if he knows the trade, can pick up all sorts of information by simply listening to the calls made by the operator-receptionist. He can't help listening. It isn't a question of eavesdropping. If the visitor has to wait for any length of time, he can get many ideas as to what is going on. The hell of it is that he often gets the wrong ideas by making the wrong deductions from the scraps of conversation he overhears. That's how rumors start. If the visitor is, for example, a chemical salesman he has a pretty good idea of what chemicals the customer buys and where he gets them. Now, if he is waiting for the purchasing agent to see him and he overhears a call being put through to another chemical house, his ears perk up and a chain reaction sets in. I know a number of skillful purchasing agents who act as intelligence officers for their laboratories, and who carefully cross examine every salesman they interview. (There's nothing a salesman won't tell you if he smells a chance to get an order.)

When a cagey purchasing agent interviews enough salesmen he will find a pattern emerging, and with his technical people, can make some pretty shrewd guesses on what the competition is interested in. Because of leaks that have developed in the past, many drug firms, when they become interested in unusual chemicals, will buy the initial quantities from brokers rather than from direct suppliers. Because of a number of situations that have developed in the trade, I have become a great believer in having an adequate number of conference rooms in which to conduct interviews with visitors. A few weeks ago I was sitting in the main reception room of one of the big cosmetic companies while the director of research carried on an interview with a salesman. It was impossible not to hear what went on and I'd have been dumb as hell not to have made a pretty good guess as to his field of interest.

I have always been opposed to secrecy insofar as production methods and equipment are concerned, but when a research program is in the gestation period and there may be patent problems involved, and, when likewise, a manufacturer sells a bulk chemical in connection with which his competitive success depends upon the source of his raw materials or the nature of his process, then I believe firmly in the utmost secrecy. Therefore, if you have something to protect, have conference rooms for interviews and seal off your telephonist.

Ho-Hum

Noted architect Minoru Yamasaki of Detroit has done "something really different" in industrial design for the new Parke-Davis branch office and warehouse near San Francisco.

L. E. Johnson, branch house superintendent for the 91-year-old pharmaceutical firm, said "an industrial building is a form of public relations, and Mr. Yamasaki and we decided this one should be noticed and appreciated."

All glass and concrete, the new *one-story building will perch four feet above the ground on a cement podium that's about the size of a football field.* It will have *a poured-concrete roof resembling a square-tufted cushion.*

Most sections of the building will be prefabricated at various industrial plants in the San Francisco area, then assembled at the site.

Located on a three-acre tract along the Bayshore Freeway (Highway 101) at Menlo Park, 28 miles south of San Francisco, the branch will house all Parke-Davis operations for northern California, western Navada and Hawaii.

The property is in the highly-restricted Bohannon Industrial Park adjoining the freeway. The area is limited to industries which are free from disturbing noises, vibration, smoke and odor. In addition, controls require adequate offstreet parking for personnel, visitors and trucks. The entire area will be landscaped

STANDOUT PERFORMERS OF THE Semi-Automatics!

For productions that call for something less than completely automatic equipment these machines were "made to order."

Pneumatic's Vacuflow Jr. offers great flexibility for dustless powder filling. It can be adjusted immediately to handle powders of different density. Its controls permit changing the method of filling at will — from non-pulsating to tamping action.

Pneumatic 2 Head Air Cleaner is a compact, easy to operate unit. When bottle necks are inserted in the two heads and pushed down by slight pressure, nozzles protrude into the bottle necks and air jets blast loose any foreign particles or dirt.

Both these machines have earned top reputations by their dependable performance in smaller and medium sized plants. If you're not ready yet for fully automatic installation, here's your budget minded answer. We'll gladly send complete details on request.

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★PNEUMATIC *Packaging and Bottling Equipment*

with broad expanses of lawn, trees, flowering shrubs and patio terraces to create an overall park like environment.

Yamasaki, who said he attempts "to design buildings compatible with the inspiring qualities of American industry," received awards this year for his design of the Consulate General's office and staff quarters at Kobe, Japan, and for the American Concrete Institute building.

"Structures that society builds, whether institutional or industrial must reflect the strength and vigor of our 20th century beliefs," he said. "In this way, these buildings will be instilled with the greatness of the technology that our society has produced."

In applying this philosophy to his designs, Yamasaki begins with the premise that since a building is more than four walls and a roof, everything that goes into its construction "has to have a functional purpose. Thus, we have the solution growing from the particular need," he explained.

He cited the 200-by-160-foot concrete "podium" and the tufted appearance of the roof of the Parke-Davis building as examples of this theory.

The site on which the building is to be erected slopes downward from Highway 101.

"To maintain the natural land contours and still display the building with maximum effectiveness, we decided on the concrete podium, which places the building on a level with the highway," Yamasaki said.

In explaining the roof, the 44-year-old architect pointed out, "we could have designed it with a flat concrete roof, but the thickness of such a roof to cover 24,000 square feet would have raised the cost and forced the use of more supporting columns. And too many columns are not conducive to economic operation of a warehouse where unobstructed floor space is the most important factor next to location."

Sections for the entire roof will be delivered to the site ready for assembly. The framework will be made of precast cement arcs, which will be tied together with steel ties and supported by six interior columns and the solid cement walls. Sixty-four quarter sections, each measuring 20-by-40 feet and 3-3½ inches thick will fit into the framework. To make it waterproof, the surface will be covered with white marble chips.

Yamasaki, who believes in the controlled use of setting, sunlight and silhouette in his designs, said the prefabricating of sections is an example of "how we hope someday to prove that buildings can be constructed industrially and be just as beautiful, more economical and as functional as those constructed by manual methods."

To carry out his belief that "buildings should be flooded with bright sunlight," the architect has separated the glass-walled administration offices from the larger storage area with a sidewalk. The separation permits entrance of sunlight at all times and on all sides.

Johnson said the departure from classical lines is a basic change in philosophy for the company. He said that in the past Parke-Davis has followed the principle that a utility building should be "along classical lines, conservative and inconspicuous.

"The idea now is that buildings should be seen and appreciated; that they should be functional; and that they should contribute something to the overall composition of the area in which they are located, rather than just occupy space," he said.

The transition in building design at Parke-Davis has been a gradual one. It started in 1954 in Detroit, where a new branch sales office was erected. The building embodied bits of the "new philosophy" . . . one-story, bright colors and liberal use of glass.

"A building, in one way," Johnson said, "is a form of public relations. The Detroit sales branch helped us realize the advantages of an attractive building in a well-traveled area."

He said construction of the San Francisco branch is scheduled to begin this fall, with completion scheduled for next spring.

In addition to the purchase of the three-acre site in San Francisco, the company in the past 18 months has acquired property for new branch office buildings in Kansas City and Montreal. In each instance, the property purchased is in what the firm considers a "more advantageous locale." In each location, Johnson said, the "change in philosophy" design now advocated by the drug firm will be applied.

Parke-Davis has 27 branch offices and depots in the United States and Canada.

The Mavericks

I wonder where all this group thinking is going to lead us? I read the other day a long article on industrial psychiatry and how important it is to keep people's emotional responses on an even keel and in line with everybody else's. It's a great industrial sin now to get out of line. But I am all for the mavericks—the guys who congenitally are independent thinkers, who aren't afraid of their bosses or their jobs; who aren't afraid to express their ideas. These are the leaders and the doers. But they get fired because modern management techniques are designed to handle the teams and not the exceptional men.

Air Handling Expert

Whenever you have a real problem in air conditioning, drying, dehumidifying, dust collection, heating or general ventilation, don't go, as so many people do, to the local tinsmith or equipment dealer and expect to get free engineering. It must always be born in mind that the engineering aspects, of the system that is to say, how it is designed, is far more important than the equipment itself. Among various types of equipment there is a fairly wide choice. In design engineering there is none; it is good or it is bad. If it is bad you cannot hope to get satisfactory conditions regardless of the equipment employed. Therefore I recommend to you V. P. Victor, Professional Engineer, 140

Cedar St., New York City. Vic is a specialist in the art of air handling and I regard him as one of the foremost experts in the country. I have known and worked with him for twenty years.

Lest We Forget

It has become a habit among thoughtless and uninformed people to say that England is finished, that she has lost the drive and the innate genius which carried her flag all 'round the world and left her influence deeply and permanently impressed upon the laws and customs; the literature and science of people everywhere. This is not the first time when prophets of doom have predicted that England was finished. She was finished during the Napoleonic Wars; she was finished during the strikes and depressions of the early years of the Industrial Revolution—which, incidentally, she created. She was finished in 1918. But always her trials and tribulations have not been the agonizing pains of death throes but, on the contrary, have been the labor pains of a new birth of creative power. And I feel this is so now. No one could have expressed this optimistic feeling better than Ralph Waldo Emerson, who, in a speech delivered in Manchester, England in 1847, said:—

"*And so gentlemen, I feel in regard to this aged England, with the possessions, honors and trophies, and also with the infirmities of a thousand years gathering around her, irretrievably committed as she now is to many old customs which cannot suddenly be changed; pressed upon by the transitions of trade, and new and all incalculable modes, fabrics, arts, machines and competing populations,—I see her not dispirited, not weak, but well remembering that she has seen dark days before;—indeed, with a kind of instinct that she sees better on a cloudy day, and that in the storm and battle of calamity, she has a secret vigor and a pulse like a cannon. I see her in her old age not decrepit, but young, and still daring to believe in her power of endurance and expansion.*"

As I have said in previous columns, the history of science is mainly the history of English thought, but English thought was not limited to science and has ranged through the whole area of human endeavor. We seldom think of this but when we do and we look at the record, it dawns upon us that "never in history have so many owed so much to so few." Here are a few random samples:—

Science: Newton, Maxwell, Galton, Davy, Faraday, Harvey, Lister, Darwin, Fleming, Boyle, Charles, Ramsey, Huxley, Thomson, Rutherford, Cockcroft, Watson-Watt, Whittle.

Law and Statecraft: Coke, Blackstone, the two Pitts, Fox, Canning, Disraeli, Salisbury, Gladstone and Churchill.

Literature: Chaucer, Shakespeare, Milton, Keats, Shelly—and a thousand others.

The Industrial Revolution: Watt, Stephenson, Besemer, Siemens, Hadfield.

The names given here are but a very small sampling of the great men who individually and collectively made an enormous contribution to your freedom, your education, your health and your prosperity. So I say, God bless them! *And there will be more.*

Building Equipment

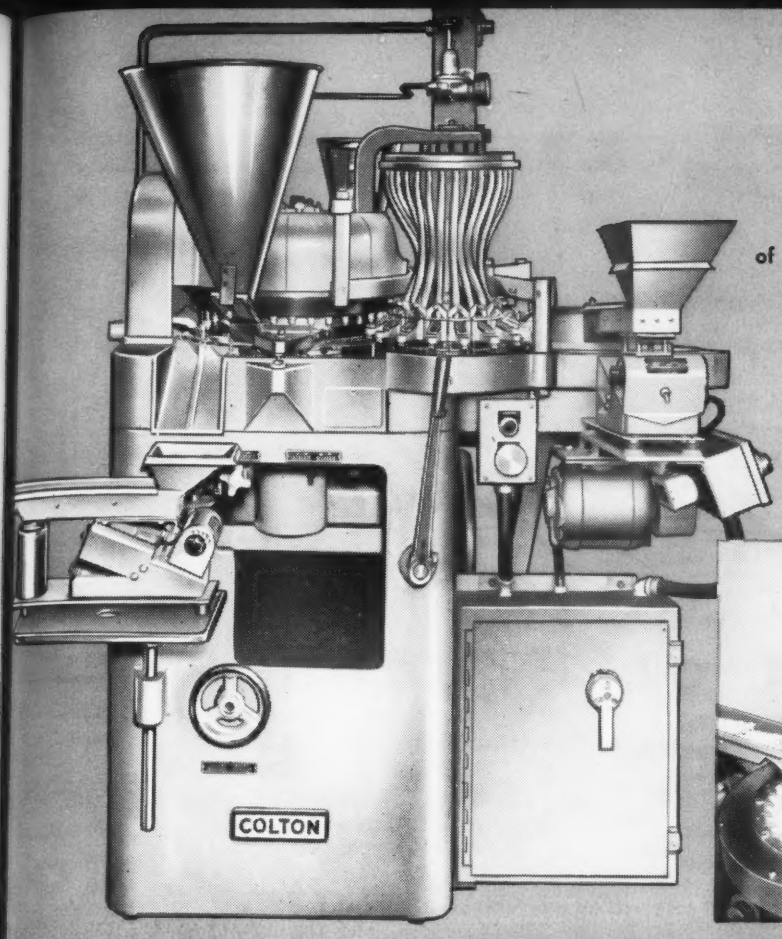
In these times when dehumidification, air conditioning, dust collection and fume control are almost universal, a considerable amount of thought must be given to the location of that equipment. I have seen completed layouts for factory and laboratory buildings that showed no provision for locating building equipment, which can be havey and space consuming yet must be accessible for maintenance. The usual thought is to stick this equipment up among the trusses. Examination then reveals that the trusses are either not high enough or will not stand the weight. Basements are sometimes used but a basement costs far more per square foot than a conventional building. Mezzanines likewise are expensive to build because they are in effect second stories. The proper place for building equipment is on the floor. It will take up a lot of space of course, and, because it is not very ornamental provision will have to be made for concealing it with some sort of partitioning. Allow plenty of space for this sort of equipment as additions to it will be repetitive over the years.

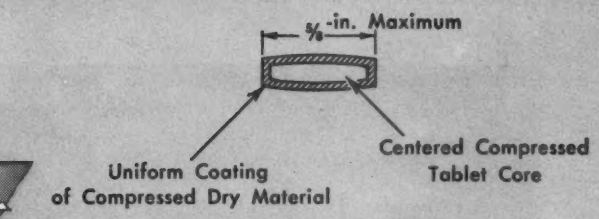
Lab Administrators

One of the most constructive additions to research programs made during the past ten years was the adoption of laboratory administrators. In most organizations the lab administrator is a glorified chief clerk. He has to watch the inventories, check the budgets, sign the requisitions and handle supply procurement. Every lab of any size should have an administrator. It doesn't make sense to employ a highly trained scientist and then load him down with clerical work, which he shouldn't have to bother with. In a good many companies there was always a lot of friction between the research director and the controllers because the scientists simply wouldn't be bothered with paper work. Since controllers regard paper work as the most sacred thing in life, it is easy to see how friction developed. In public corporations, the controller is responsible to stockholders for financial reports. Inventories must be accounted for and it is really heartbreaking to them when an inventory is short $4.25. After all it's stockholder's money. But I have noticed among really good scientists a sublime indifference to all sorts of paper work and almost as great an indifference to the ordinary minutae of management procedures.

Tablet and Capsule Inspection Machine

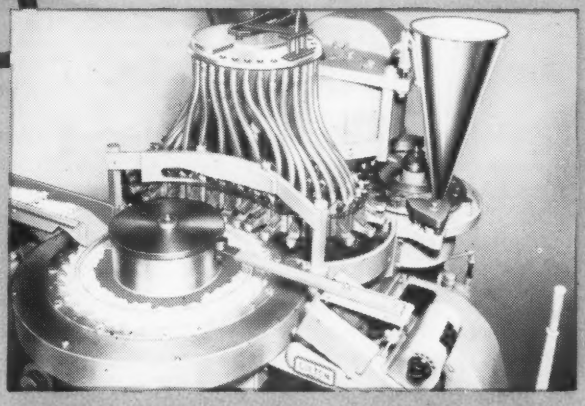
K-V Pharmacal Company, 2503 South Hanley Road, St. Louis 17, Mo., is selling through its Tablet Products Division, some of the equipment and materials used by K-V Pharmacal in its own manufacturing processes. Available is its high-speed TPI Tablet Inspection Machine which, according to the company, permits inspection of 240M or more tablets or





Maximum Production Rate: 900 per minute

A vibrating unit at the rear of the feeding disc sends cores into slots in the pick-up ring.



COLTON No. 232—revolutionary new high-speed automatic applies dry coatings to tablet cores at speeds up to 900 tablets per minute

Colton Compression Coating Tablet Press No. 232 is, basically, a standard, Colton high-speed No. 233 Rotary Tablet Press and retains all of the well-proved engineering and performance features which have made that series so efficient and economical in high-speed, long-run production work. The conversion involves, chiefly, the removal of one set of pressure rolls and the installation of a core feeding mechanism. Performance has been amply demonstrated and the new No. 232 is in full and steady production in the plants of leading pharmaceutical manufacturers.

The simplicity of the principle applied in feeding upper and lower granulation charges; the controlled accuracy and adjustability of each charge; the precisely guided, automatically exact centering of the core; the dependable assurance of no coreless tablets by simple, automatic checks—all these recommend this machine for high-speed production work where dry coating is either preferred or necessary. You are invited to write for Bulletin AC-40.

FEATURES:

- Applies uniform, dry coatings to compressed tablet cores
- Coats round, flat face bevelled edge; flat face, shallow cup; standard cup; capsule and oval shaped cores: friable or hard-tablet types
- Produces tablets up to ⅝" max. finished dia.: rate, up to 900 per minute
- Assures perfect centering of cores
- Cannot produce coreless tablets
- Total standard depth of fill, ½"
- Maximum compression force, 6,000 lbs.
- Handles cores with "velvet touch" vacuum mechanism
- Simple, effective safety devices
- Punches and dies interchangeable with Standard Colton 233 RP and others
- Embossed or engraved punches and dies available

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Here, as in the traditional Pressure Steam or Dry Heat methods, the American Sterilizer Company offers the world's largest accumulation of facilities, experience and research data on the broad subject of sterilization.

We have a complete range of techniques and automatically controlled equipment for standard or special installations . . . for laboratory, pilot plant or production application. Experimental and pilot plant facilities are available through our Research Department . . . and engineers of our Scientific Division are "on call" for consultation on such matters as production processes, techniques or packaging materials related to sterilization.

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If any sterilizing process is or should be a factor in your product . . . outline your problem to us. We can help you!

SCIENTIFIC DIVISION

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capsules daily. It adjusts automatically to any size and shape tablet or capsule and positively turns them over for thorough inspection of both sides, K-V Pharmacal states.

Tablets or capsules feed at an adjustable rate from a stainless steel hopper onto an inspection belt. After passing the first of two inspectors, they "sandwich" between two belts which automatically adjust to any size or shape tablets or capsules without marring or breaking them. The double-belts turn the tablets and capsules over and feed them on to another conveyer belt for inspection on their other side by a second operator.

Imperfect tablets are removed from the conveying belts by hand or with a vacuum pickup and placed into an easily emptied reject tray attached to the side of the machine. Perfect tablets fall into a drum ready for packaging.

The TPI Tablet Inspection Machine is completely flexible, the rate of flow is adjustable, can be operated at various speeds, has micro start-stop switch for each inspector, is built of aluminum on easy-move casters.

Victor M. Hermelin, president of Tablet Products, Inc., says that in the next several months other equipment and special manufacturing materials will be marketed.

First will be individually motorized coating stands made of stainless steel, and a combination air supply-dust pickup unit which K-V Pharmacal has used successfully to speed up the coating process while keeping air dust-free. The coating pan and stand along with the air supply-dust pickup unit provides a complete individual system which can be used without interconnection to any other unit in the department.

Still under development are low cost, high speed counting units for rapid bottling of tablets and capsules, a low cost machine for imprinting code numbers on labels, an automatic capsule polishing machine, improved materials for subcoating and smoothing powder, tablet sealer, enteric coating compound and tablet polishing liquid.

Rubinstein's Order Filling Technique

At Helena Rubinstein's Long Island plant a three-minute savings over previous methods in order-picking time has accomplished daily savings of twenty hours, according to Perrin Paus Company, advertising agency of the Faultless Caster Corp

In the Rubinstein shipping department, where a team of twenty order pickers continuously select items, four identical rows of picking bins, containing over 430 different items, are set-up in a straight line parallel to each other. The entire Rubinstein line can be picked in a total of 84 feet. As orders are received, they are immediately processed—the order quickly filled and shipped. Each standard order is picked from stock, checked for accuracy in filling, packed, and shipped within eight hours.

The significant cost-cutting and fast order-handling

By pushing truck from side, all areas of truck shelves are accessible to reach. Even several small orders can be handled intact on one truck without accidental misplacement. Aisles accommodate two trucks side-by-side for maximum efficiency. Fully loaded truck is easily handled by one girl.

operation is based upon the use of specially designed stock trucks. These trucks have several distinct advantages for this application over conventional floor trucks. The trucks have been designed to be pushed from the side or the end. This permits the order picker to easily reach any part of the trucks shelves, and to lay-out the merchandise in the same sequence as they appear on the order, for ease in the checking operation. The use of four Faultless 400 Series Swivel Plate Casters on each truck gives the necessary maneuverability that enables the worker to easily guide the wide trucks in the aisles and position the trucks at subsequent work stations. Two trucks can be moved side by side down each picking aisle or if necessary can be pushed end wise. Normally, several small or one large order can be accommodated on one truck, thereby greatly decreasing any chance of "partial shipments" due to misplacement of items.

Even when fully loaded, these trucks can be easily maneuvered by the girls in the order department. After surveying available styles and types for this important handling operation, engineers at Helena Rubinstein chose the Faultless 400 Series, Double Ball Bearing Caster. Five-inch diameter wheels were chosen for easy rolling.

After orders have been picked, the filled trucks are moved to a checking table, where each order is double checked against actual merchandise that has been picked. Appropriate shipping labels, copy of order, etc., is attached to merchandise. The truck is then moved to a packing station, where it is packed and marked for transportation to customer. At this point, cartons for shipment are moved by powered conveyor to loading dock. The utilization of two different handling systems, each accomplishing the job to which it is best suited, is typical of the careful planning in each department of this Rubinstein plant.

After orders have been transferred to conveyor, the empty stock trucks are returned to the stock area for re-use. Because there are few delays in completing the order being processed, the inventory of trucks can be

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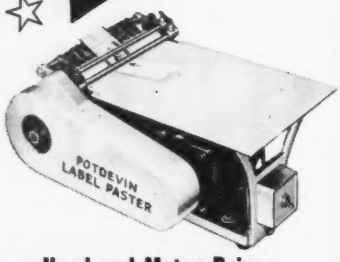
See for yourself how POTDEVIN LABELING MACHINES Save time, increase efficiency!

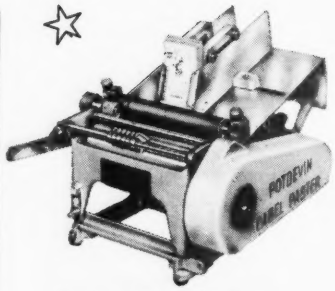


Hand and Motor Driven

LABEL PASTERS

Handles any shape label without adjustment. Dial control regulates paste flow—no excess. Cuts stock loss. One machine can supply several operators. Available in 6" and 8½" models.

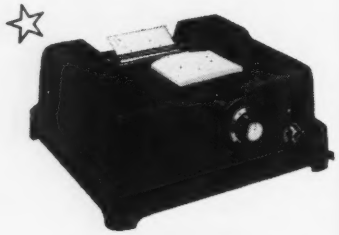
POTDEVIN has been serving the labeling needs of the Drug and Cosmetic manufacturers for over 60 years. Hundreds of plants use POTDEVINS for short runs or for auxiliary use so as not to disturb mass production set-ups. If you still use hand labeling for short runs investigate POTDEVIN today! POTDEVIN will send you a labeling machine on *FREE TRIAL. This is the most convincing way to see for yourself how great a time and money-saver a **POTDEVIN** can be.



Semi-Automatic Feed

LABEL PASTERS

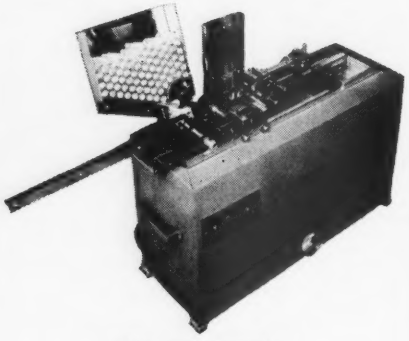
Quickly adjustable to all shapes of labels from ½" to 7½" wide. Dial regulates paste flow. Speeds-up production 50%.



Thermoplastic Label

ACTIVATORS

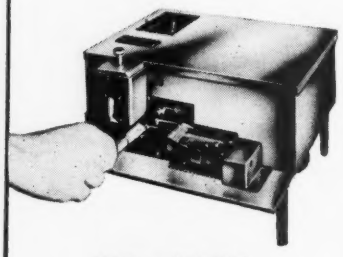
Activates delayed tack, pre-coated labels quickly and evenly. Permanent labeling on glass, metal, plastic, fabric, etc. Thermoplastic heating control. Available in 6" and 12" widths, motor driven.



Vial and Ampule

LABELER and CODER

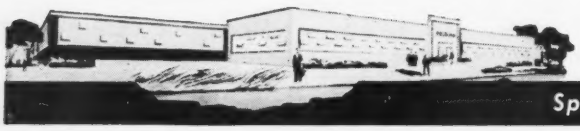
Completely automatic labeling and coding of vials and ampules. Available in 1, 2, 3, 5 and 10 c.c. sizes.



Collapsible Tube

LABELERS

Applies up to 32 slip labels per minute to collapsible tubes. Automatically forms and ejects label on tube. Machines available for ⅛, ¼, ½ and 1 oz. tubes.



POTDEVIN MACHINE CO.

257 NORTH STREET TETERBORO, N. J.

ESTABLISHED IN 1903 POTDEVIN

Specializing in Labeling Machines for over 60 years

kept at a minimum, since each is in almost continuous use.

Vacuum Shelf Dryers

A new series of vacuum shelf dryers, for safe, rapid drying of heat-sensitive, air-sensitive, or pyrophoric materials, such as titanium, zirconium, etc., as well as materials which must be dried without agitation, has been introduced by the Vacuum Equipment Division of F. J. Stokes Corporation, Philadelphia.

The new series—Model 238—carries ASME Code Certification on all pressure parts as a standard feature. The shelves are rated at 50 psig, and each one undergoes hydrostatic tests before and after assembly at 100 psig.

The chamber is constructed entirely of welded steel for maximum safety and dependability under full vacuum operation.

A major design improvement in the new Stokes series of vacuum dryers places all shelf and manifold connections outside of the chamber, thus avoiding the possiblity that leaks might develop within the chamber and disturb process vacuum or contaminate the product being dried. This feature also simplifies the maintenance of these connections by making access to them more convenient—an important consideration when running alternate heating and chilling cycles, where temperature changes frequently tend to create leakage.

Carbon dioxide shielded welding is used exclusively in the fabrication of the shelves. This procedure blankets the bare weld wire with inert carbon dioxide, preventing any oxidation of the weld metal. This means that fluxes are not necessary and slag inclusions which might weaken the weld are avoided.

The new series of vacuum dryers is available in a complete range of models with shelf-sizes from 24 x 24 inches up to 60 x 80 inches. Standard-size chambers are maintained in stock in finished condition. Any desired number of standard shelves—also maintained in stock—can be inserted in the chambers according to the customer's requirements. This means quick delivery of a complete tailor-made shelf drying system. Heating by hot water, steam, or special heat transfer fluids can be provided for, as desired.

Filling Machine

Hope Machine Company describes its new Filling Machine Type 19 as accurate and highly versatile. Designed to handle 10 sizes of containers, this machine is in use by major producers and packagers of petroleum jellies. Because of its extreme adaptability, the unit may find acceptance in many fields, including the drug, pharmaceutical and cosmetic industries.

The manufacturer states that this machine fills 10 jar and bottle sizes, with instant, accurate quantity adjustment possible while it is in operation. A front feed-in-line feeding mechanism has a precision designed feeding screw. There is an over-the-line vacuum air cleaner to blast and clean containers. Nylon centering bells position containers accurately under nozzle. An automatic top finisher produces smooth product fill with no excess on jar rim.

A new automatic discharge rake bar gently discharges small and large containers alike. Production speed ranges from 90 to 120 containers per minute.

For additional information on this or other filling machine operations, write or call Hope Machine Company, 9400 State Road, Philadelphia 14, Pa., Dept. C.P.

Dust Free Filling and Packaging of Powders

The Triangle Model U-12 Auger Packer has been designed to package all kinds of powders, and difficult-to-handle products in amounts ranging from 1 oz. to 10 lbs. Almost any style or shape package may be used. Packing pressure is fully adjustable, from a loose fill to a hard pack.

The new machine has been made fully automatic; it automatically discharges at timed intervals the desired amount of material. It therefore has become a pace-setter for the operator.

Speeds up to 30 packages per minute are obtainable. Accuracy is frequently as close as 1/8 oz. on 1 lb. amounts.

The machine can also be equipped with an automatic infeed-outfeed package transport conveyor when filling rigid containers. Speeds up to 50 packages per minute are then obtainable.

A new bulletin describing these new machines is available by writing to Triangle Package Machinery Co., 6633-55 West Diversey Avenue, Chicago 35.

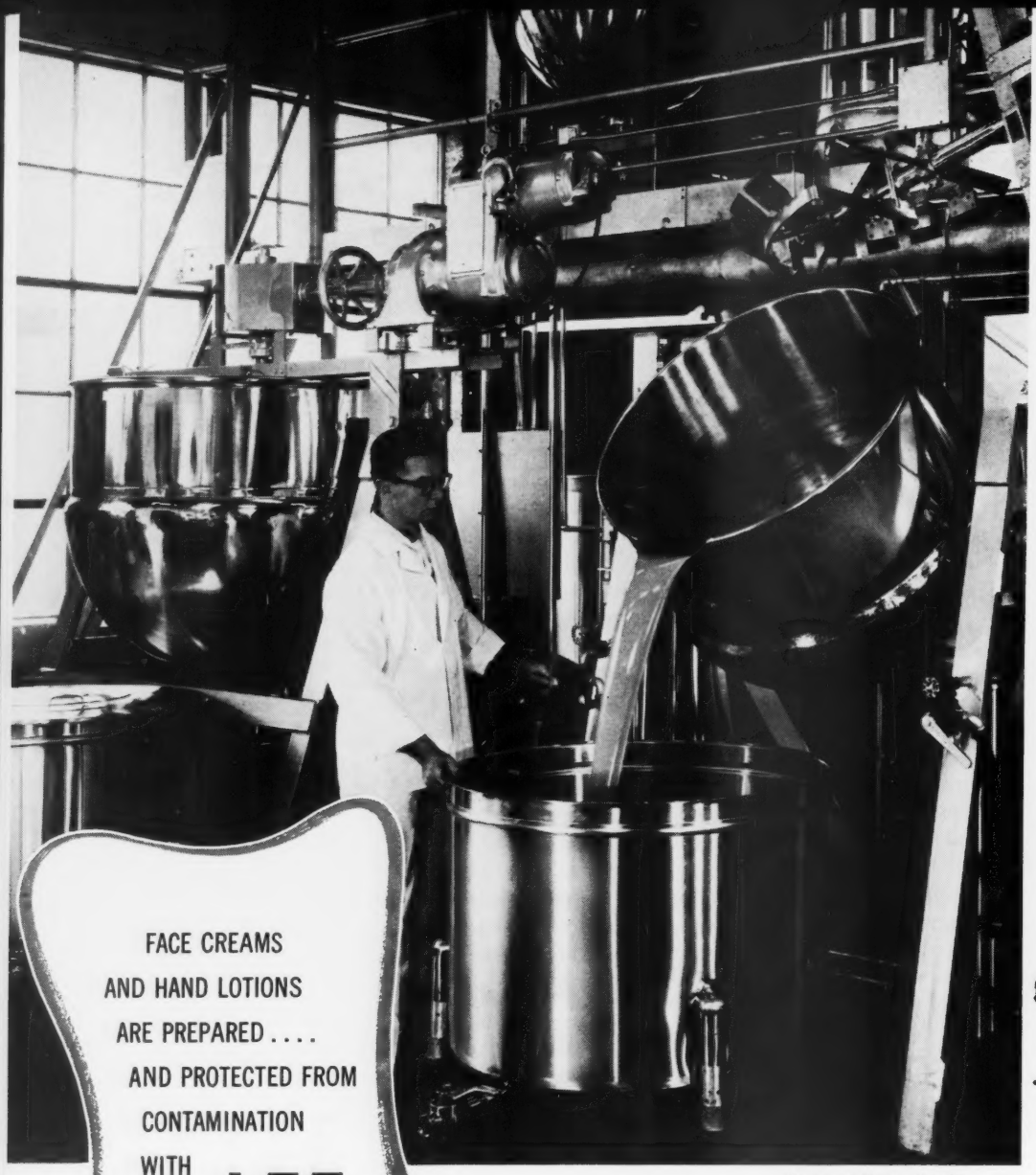
Tablet and Capsule Counter

A new tablet and capsule counting machine, especially designed to double production, is being imported from Germany by the Burnet Company, Paramus, N. J.

Constructed with double chutes, the new ROTAX Model "H" doubles production rates and is the largest advance in tablet counting. Capable of filling up to 1800 containers with 100 tablets per hour or up to 180 containers with 1000 tablets. The exact count is determined by measurement of tablet diameters. An oscillating part feeds two chutes providing continuous filling operation.

High Speed 3-Roller Laboratory Mill

A new high speed 3-roller mill for laboratory for pilot scale use, developed by Charles Ross & Son Co., 148-156 Classon Ave., Brooklyn 5, is an exact replica of the larger Ross Roller Mills and is designed to give exactly the same results. The new mill, the Ross #52LC 4½" x 10", can be converted to either fixed center roll operation or floating center roll operation with simplified two point control. In addition, the mill features built in quick roll release for loosening rolls for cleaning and returning to exact original setting. The improved mounting bench is completely enclosed with storage shelf and pivoted can holder is adjustable for various size cans.



FACE CREAMS
AND HAND LOTIONS
ARE PREPARED....
AND PROTECTED FROM
CONTAMINATION
WITH

LEE *STAINLESS STEEL* KETTLES

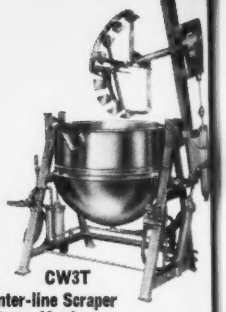
Courtesy of Charles of the Ritz

Assuring high quality control in the production of delicate creams and lotions, these Lee steam-jacketed stainless steel kettles are corrosion-resistant and easy to clean and keep clean.

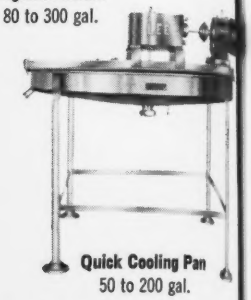
Complete product mixing is obtained through the use of Lee double-motion center line scraper agitators, whose large stainless steel scraper blades continually move the contents from the heated walls toward the center, keeping an even temperature throughout.

Lee hydraulic operated cylinders—using your present water lines—give perfect control and safety not only in tilting the kettles for pouring and cleaning, but also in raising and lowering the tilting agitators.

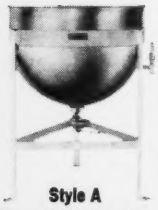
Descriptive bulletins for all of our specially-designed processing equipment available on request.



CW3T
Center-line Scraper Agitator Kettle
80 to 300 gal.

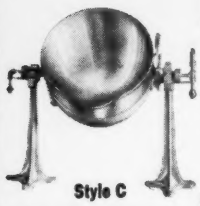


Quick Cooling Pan
50 to 200 gal.



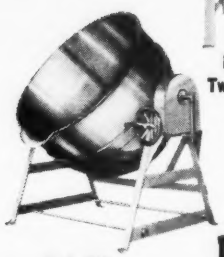
Style A
Two-thirds Jacketed
5 to 500 gal.

Style B
Full Jacketed
10 to 300 gal.



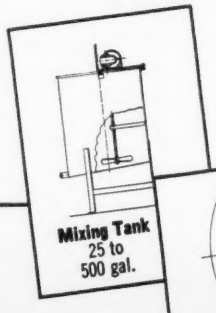
Style C
Two-thirds Jacketed
5 to 100 gal.

Pressure Kettle
Two-thirds Jacketed
40 to 200 gal.



Style CW
Two-thirds Jacketed
80 to 300 gal.

Pulp Tank
500 to 2,000 gal.



Mixing Tank
25 to
500 gal.

Storage Tank — 100 to 5,000

LEE

Technical bulletins fully describing these processing units gladly sent on request.

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Designers and Manufacturers of Corrosion-Resistant Processing Equipment for over 25 years.

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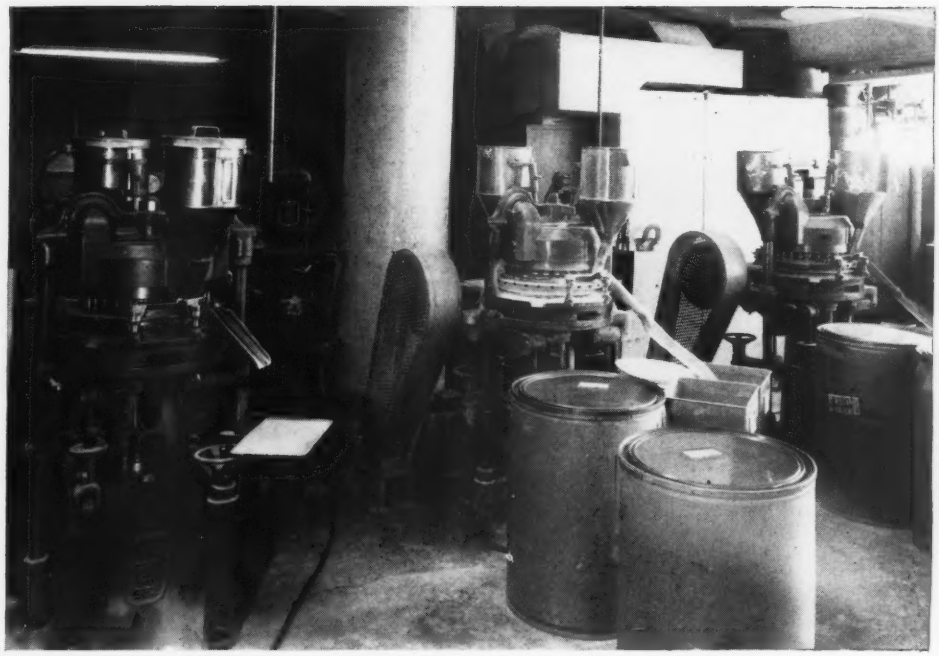
DRYing suits the process



Night and day, seven days a week; that's the schedule this Lectrodryer works, holding the humidity constant in this tableting room.

Your materials are allergic to moisture. But the process calls for grinding, screening, evaporating, sublimating, tableting, conveying or storing them in an atmosphere that's soaking wet. You can DRY that air with a Lectrodryer and cancel out that variable.

Your materials deteriorate when heated, so you can't use that method of driving off unwanted moisture. A Lectrodryer is an adsorbent drier—makes air, gases and organic liquids truly DRY without destructive heating. Quality is preserved.

There's a Lectrodryer for every DRYing purpose—described in Bulletin 109. For a copy, write Pittsburgh Lectrodryer Division, McGraw-Edison Company, 309 32nd St., Pittsburgh 30, Pennsylvania.

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A MAN REQUIRES SPECIAL TREATMENT!

He appreciates a pleasantly scented product just as thoroughly as does his "so-called" better half. But, generally speaking, he's terrified at the very thought of smelling "perfumy"! He buys *shave creams, soaps and aerosols; talcs and after-shave lotions; hair conditioners, shampoos, tonics and brilliantines; even colognes* . . . but to secure his brand allegiance requires one primary factor. The fragrance used must be one that he will unquestionably identify as *masculine*. To develop such custom-tailored odors demands not only good perfumers and modern equipment . . . but also the invaluable background that comes only with years of practical experience. For more than a century and a half, D&O has been serving the perfumed products industries of the nation with time-tested fragrances. Let our product-development laboratories help you give that sales-winning "special treatment" to your men's toiletries! Consult D&O.

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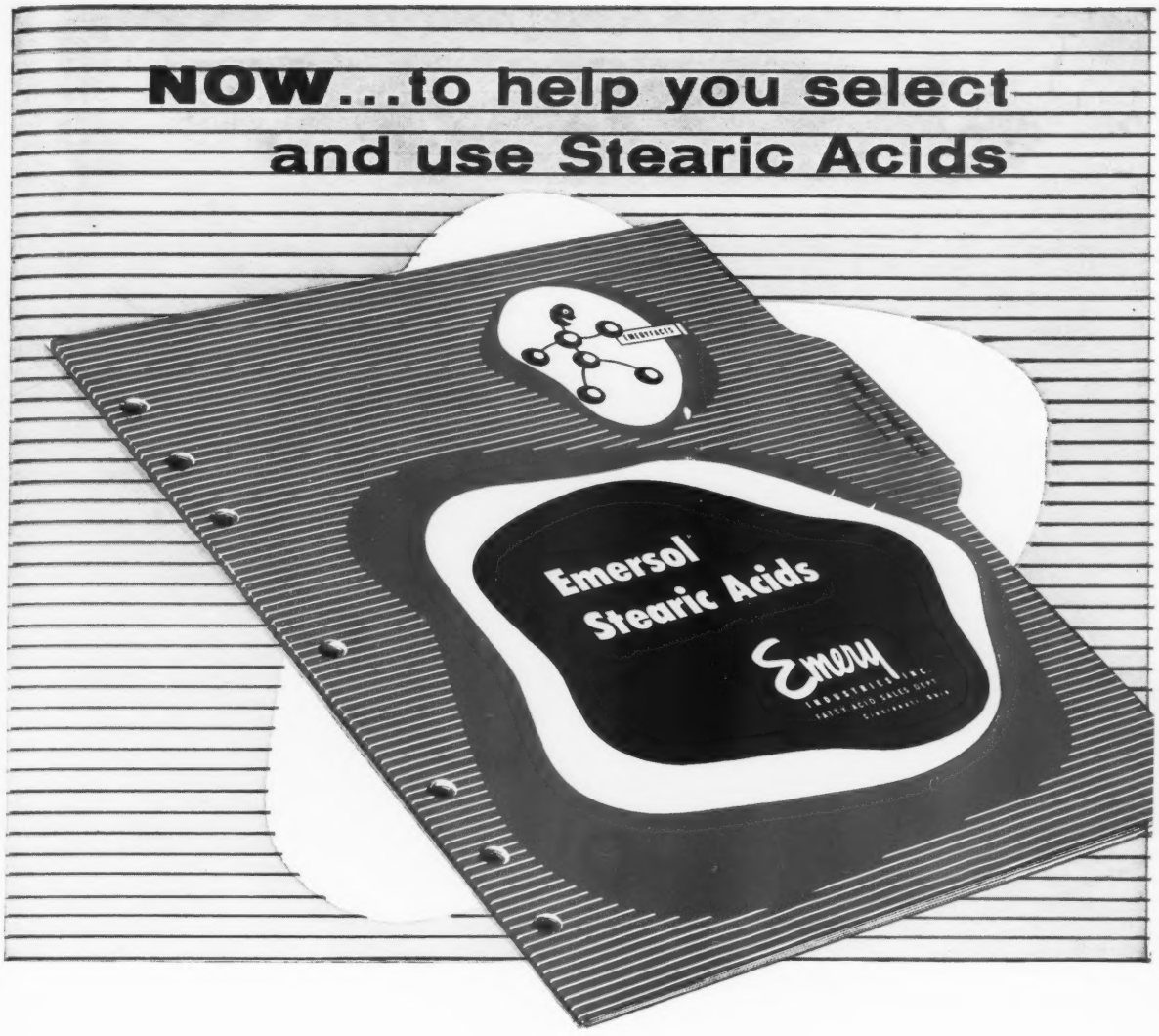

The most comprehensive booklet on stearic acid yet published is now available for your use. This 24-page booklet, titled "Emersol Stearic Acids", is designed to help you in evaluating stearic acids and in selecting the best grade for your specific use by interpreting various test results in terms of end-product performance. Included also are brief discussions of Emersol Stearic Acids, tables of physical properties, and such charts as specific gravity, viscosity, etc.

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Company.....

Address.....

City.....Zone.....State.....

Compounder's Corner

Diaper Rash Powder

A baby powder containing silicones, glyoxyl diureide, and hexachlorophene produced excellent results in the management of diaper dermatitis in 84 infants and young children according to H. W. Kaessler (*Arch. Pediat.* 74:47, 1957); complete clearing of the diaper region was obtained in 100 per cent of the 84 cases. The powder also was effective in the prevention of "diaper rash" in the majority of 127 additional infants and young children. The powder was nontoxic and nonsensitizing. The rationale for its efficacy lies in (1) the ability of silicone to repel moisture; (2) the stability and nonirritant keratolytic qualities of allantoin, which stimulates epithelial healing; and (3) the effective and nonsensitizing bacteriostatic attributes of hexachlorophene.

Prolonged Action Tablets

In the article by Jack Cooper, Director of Pharmacy Research and Development at Ciba, "Lontab Repeat Action Tablets," which was published in the September issue of this magazine, the title was about as contradictory as it could be. The paper specifically showed that "Lontabs" were prolonged action tablets free from the disadvantages of repeat action. In filing or indexing this article, this obvious fact should be kept in mind.

Silicones in Medicine and Surgery

This booklet, by Dr. R. R. McGregor, Assistant Director of Research of Dow Corning is available from the Dow Corning Corporation and is a valuable contribution to the literature of the silicones. Twenty-eight pages are devoted to descriptions of toxicological studies, applications in dermatology and cosmetics, instrument sterilization fluid, dental applications, coating of vials, coating of capsules or pills, use of silicones in cattle bloat, in blood handling and surgery, in gastroscopy, as fluid carriers for injectables, in pulmonary edema and peptic ulcer and in miscellaneous medical applications. The bibliography, which provides short abstracts of each publication, contains 92 items.

Hyprin GP25

Hyprin GP25 is a viscous, yellowish-amber liquid which is prepared by the reaction of glycerin and propylene oxide. The compound has an average hydroxypropyl substitution of 2.5.

It should find use in many of the applications where glycerin, glycols, or sorbitol are used, especially where decreased volatility and/or decreased hygroscopicity are desired.

The compound has a very low acute oral toxicity. There would seem to be no hazard from the ingestion of single doses. The product also is low in chronic oral toxicity as judged by the results of dietary feeding studies with rats.

Hyprin GP25 is only very slightly irritating to the eyes and should not cause any corneal injury.

Skin contact should cause no irritation even upon repeated prolonged exposure. There is no hazard of systemic toxicity from absorption through the skin.—Dow Chemical Company.

Hyprose SP80

Hyprose SP80 is a viscous, yellowish-amber liquid which is prepared by the reaction of sucrose with propylene oxide.

It shows promise as a plasticizer for cellulosic materials, including paper, cellophane, and methylcellulose. It is less volatile and less affected by atmospheric moisture changes than either glycerin or propylene glycol.

Fatty acid esters of Hpyrose SP80 have been made which exhibit surface active properties. Because there are eight reactive hydroxyl groups in the structure, as many as eight moles of fatty acid can be esterified with one mole of Hyprose SP80.

These esters show promise as emulsifiers and detergents. Judging from preliminary toxicological studies, they warrant further investigation for applications in food and cosmetic products.

Hyprose SP80 has an extremely low acute oral toxicity. There would seem to be no hazard from ingestion of single doses. The product also is low in chronic oral toxicity as judged by the results of 90-day dietary feeding studies with rats.

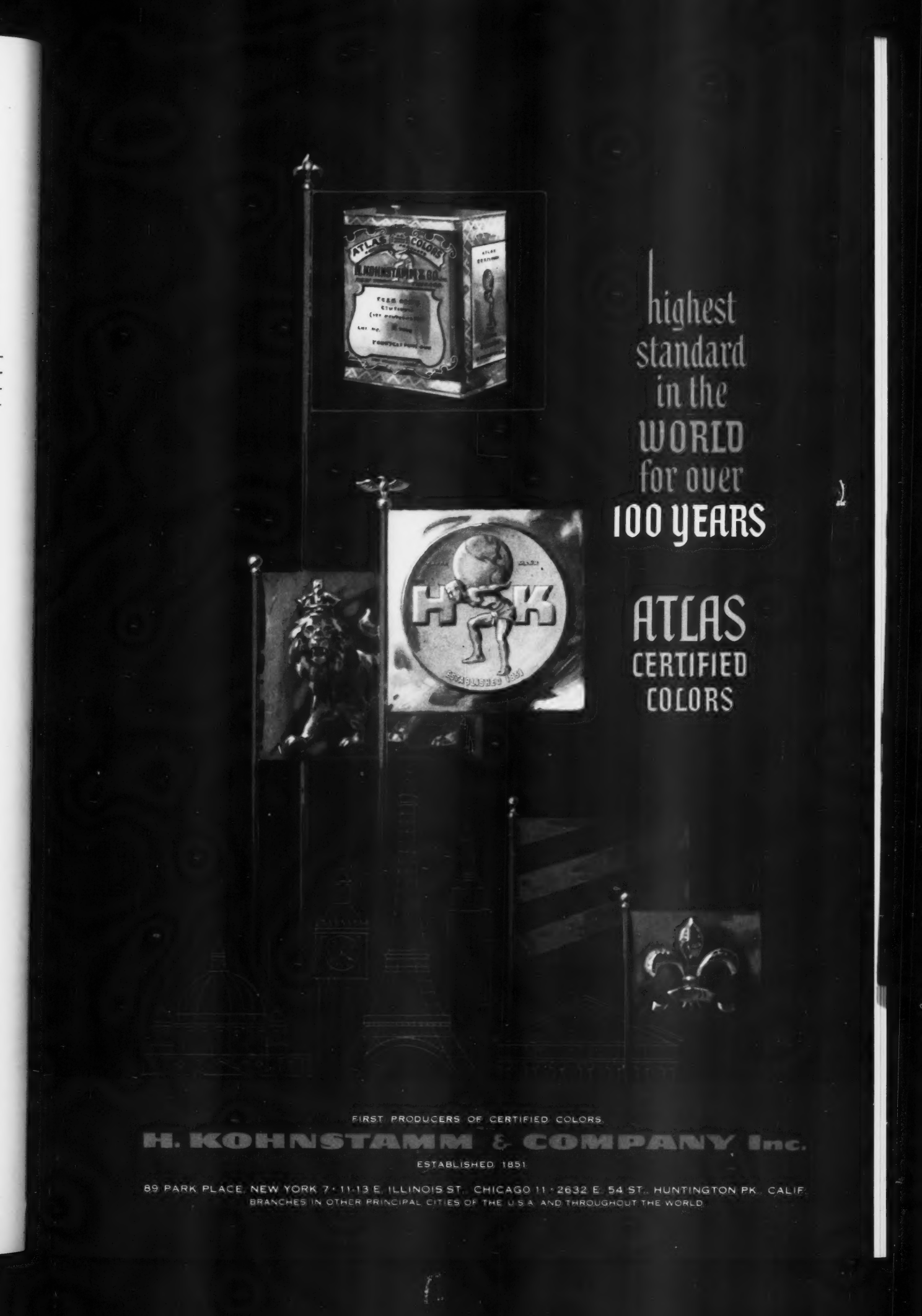
Contact with Hyprose SP80 has essentially no effect upon the eyes. Any effects that do occur will probably be due to the mechanical action of the thick sticky material.

Hyprose SP80 has no effect upon the uncovered skin, even upon repeated prolonged contact. Exposures to the covered skin, such as would occur under clothing or in shoes, may cause a very slight irritation upon repeated prolonged contact. There is no hazard of systemic toxicity from absorption through the skin.—Dow Chemical Company.

Cosmetics—Science and Technology

In this department we try to report the new and the important, with success varying according to the state of the literature. Now we are happy to report at length on a new and important event, the receipt of the long-awaited book "Cosmetics: Science and Technology" edited by Edward Sagarin with the assistance of an editorial board including H. D. Goulden of the Toilet Goods Association, E. G. Klarmann of Lehn and Fink, Inc. and D. H. Powers of the Lambert-Hudnut Division of Warner-Lambert Pharmaceutical Corp. along with the executive editor. The book, published by Interscience Publishers, Inc. of New York contains 1433 pages (over 2500 references and more than 800 formulas), is priced at $25 and may also be obtained through the Book Department of this magazine at the stated price.

Each chapter is written by a specialist in the field and their names represent a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Who's Who of the major research people in the industry.

Part I, **The Scope of Cosmetics** has chapters on *Definition and Limitations* by Hugo Mock who was general counsel of the Toilet Goods Association until his death; *Origin and Development of Cosmetic Science and Technology*, a historical study by Florence E. Wall, consultant and medalist of the Society of Cosmetic Chemists; *Status and Structure of the Cosmetic Industry* by Edward Sagarin of Standard Aromatics, Inc.

Part II, **Toilet Preparations,** has separate chapters covering all types of cosmetic products in which the underlying requirements of the product and the selection and properties of the raw materials are exhaustively discussed. In each chapter a large number of formulas, with manufacturing directions, is included. *Cleansing Creams and Lotions* (18 pp.) by Edward J. Masters of Helena Rubinstein, Inc.; *Emollient Creams and Lotions* (48 pp.) by Gabriel Barnett of Coty, Inc.; *Hand Creams and Lotions* (35 pp.) by S. J. Strianse of Shulton, Inc.; *Hormone Creams: Formulation and Assay* (7 pp.) by Irving Levenstein of Leberco Laboratories; *Suntan Preparations* (24 pp.) by Emil G. Klarmann; *Skin Lighteners and Bleach Creams* (9 pp.) by C. W. Ozier of Plough, Inc.; *Face Powders* (27 pp.) by Jean R. L. Martin of Martin Vallere Laboratories; *Rouge* (13 pp.) by H. Heinrich of Coty, Inc.; *Foundation Makeup* (9 pp.) by J. George Fiedler of Strand Cosmetics, Inc.; *Lipsticks* (15 pp.) by Paul G. Lauffer of Northam Warren, Inc.; *Eye Makeup* (10 pp.) by Julius Wetterhahn and Milton Slade of Helean Rubinstein. Inc.; *Dentifrices* (6[illegible] pp.) by S. D. Gershon of Lever Brothers Co., H. H. Pokras of Milani Foods and T. H. Rider (deceased), formerly of Lever Brothers Co.; *Mouthwashes* (19 pp.) by Murray H. Rosenthal of Block Drug Co.; *Shampoos* (42 pp.) by Donald H. Powers; *Shaving Soaps and Creams* (16 pp.) by Herbert H. Guest (deceased), formerly of J. B. Williams Co.; *Preshave and Aftershave Preparations* (19 pp.) by Saul A. Bell of Alfred D. McKelvy Co.; *Depilatories* (22 pp.) by Richard H. Barry of Union Pharmaceutical Co.; *Bleaches, Hair Colorings and Dye Removers* (52 pp.) by Florence E. Wall; *Wavesets, Lacquers, Rinses and Conditioners* (19 pp.) by Frank J. Berger of Wella Corporation; *Hair-Grooming Preparations* (33 pp.) by Richard K. Lehne of Wildroot Co.; *Permanent Waving* (45 pp.) by S .D. Gershon, M. A. Goldberg of Lever Brothers Co. and M. M. Reiger of Lambert-Hudnut; *Hair Straighteners* (13 pp.) by George G. Kolar and Peter Parker of Kolar Laboratories, Inc.; *Antidandruff Preparations* (10 pp.) by Herbert J. Spoor of the New York Medical College; *Bath Preparations* (9 pp.) by Orville Davenport of Avon Products, Inc.; *Beauty Masks* (6 pp.) by Morgan Gaffney of M. D. Gaffney Co.; *Eye Lotions* (12 pp.) by John O. Barnett of Wyeth, Inc.; *Nail Lacquers and Removers* (15 pp.) by John Peirano of Commercial Ink and Lacquer Co.; *Fingernail Elongators and Accessory Nail Preparations* (24 pp.) by Leonard J. Viola of Visom, Inc.; *Antiperspirants and Deodorants* (23 pp.) by Sophie L. Plechner of Carter Products, Inc.; *Fragrance* (30 pp.) by Edward Sagarin; *Processing of Alcoholic Fragrance Solutions* (4 pp.) by Robert F. Schuler of Prince Matchabelli, Inc.; *Emulsified and Solid Fragrances* (13 pp.) by Robert F. Schuler; *Aerosol Cosmetics* (34 pp.) by H. R. Shepherd of Aerosol Techniques, Inc.; *Baby Toiletries* (37 pp.) by Gabriel Barnett; *Hypo-allergenic Cosmetics* (15 pp.) by Sylvia Kramer of Marcelle Cosmetics.

Part III covers **Manufacture and Technology** with chapters on *Plant Layout and Equipment* (29 pp.) by L. M. Rogers of Lambert-Hudnut; *Quality Control* (55 pp.) by Martin A. Brumbaugh of Bristol Laboratories, Inc., Louis B. Dobie (retired) and William C. Frey of Bristol-Myers Products Division; *Performance and Evaluation of Cosmetics* (21 pp.) by Dean Foster and Noel Schwartz of United States Testing Co., Inc.; *Emulsification* (36 pp.) by William C. Griffin of Atlas Powder Co.; *Preservation of Cosmetics* (41 pp.) by Neil E. Rigler of American Cyanamid Co. and Jerome Schimmel of Westwood Pharmaceuticals; *Color in Cosmetics* (32 pp.) by Samuel Zuckerman of H. Kohnstamm & Co., Inc.

Part IV is devoted to **Physiological Considerations.** *Physiology of the Skin and its Appendages* (69 pp.) by Samuel M. Peck of the Department of Dermatology of Mt. Sinai Hospital and T. J. Michelfelder of the Kersten Clinic; *Physiologic and Pharmacologic Aspects of Sweating* (44 pp.) by Franz Herrmann and Norman B. Kanof of the New York University Post-Graduate Medical School; *The Physiology of Olfaction* (12 pp.) by Joseph Hersh of the New York University Post-Graduate Medical School; *Hormones in Cosmetics* (12 pp.) by Max Goldzieher of the Goldwater Memorial Hospital; *Sensitivity Testing* (21 pp.) by Louis Schwartz, formerly of the United States Public Health Service.

Part V covers **Legan Considerations.** *The Federal Food, Drug, and Cosmetic Act and the Cosmetic Chemist* (49 pp.) by G. Robert Clark of the Food and Drug Administration; *Canadian Cosmetic Regulations* (3 pp.) by J. L. Thomson, formerly of the Cosmetic and Color Section, Food and Drug Division, Department of National Health and Welfare of Canada; *The Federal Trade Commission and the Cosmetic Chemist* (19 pp.) by Wallace Werble of F-D-C Reports; *Patents and Trade Marks* (21 pp.) by Thomas Cifelli of Richards and Cifelli.

The book closes with the usual author and subject indexes and an index of trade names. The work is of such scope that a detailed critical review would have to be impossibly long; it is sufficient to say that the blue-ribbon authors have done a job worthy of their reputations.

Alkylolamides

Lauryl diethanolamides are valuable in shampoo formulations where profuse and persistent foam is essential for sales appeal according to G. R. Hembrough (*Chem. Prod.* 1957:331). Another product dependent on flash and stable foam is the bubble bath type of composition. The bubbles are initiated by the force of a jet of water such as the bath tap, but unless a stabilizer is present the foam quickly collapses.

Stabilizers also impart a more soapy feel and remove tackiness associated with some shampoos when used in hard waters. In cream shampoo the stearic acid amides give an attractive pearliness and opacity to the product.

In the manufacture of lipsticks there has always been some difficulty in finding suitable mediums having good solvent properties for fluoresceine dyestuffs, patents have been granted claiming that special alkylolamides have been developed which will dissolve vastly greater amounts of 'eosin' than waxy or oily materials previously available.

In conjunction with other emulsifying agents, alkylolamides are effective in preventing creaming, and alone they prove to be very satisfactory in producing oil-in-water emulsions. Perhaps a more novel use embracing the alkylolamides as water-in-oil emulsifiers, is illustrated as being applicable to absorption bases. These are prepared dispersing 5 per cent of the amide in petrolatum or similar hydrocarbons, such a composition is said to absorb several times its own weight and retain its stability without separating over long periods of storage.

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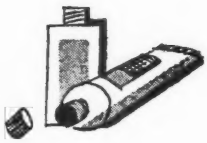


Advancing Therapy

Flavonoids

The high hopes once held for the flavonoids as important metabolites have not materialized according to W. N. Pearson, reporting for the A.M.A. Council on Foods and Nutrition and Council on Drugs in *J.A.M.A.* 164:1675, 1957. Instead, present knowledge indicates that, while they possess mild pharmacological properties under certain conditions, the flavonoids have no known nutritional functions. They cannot be regarded as essential nutrients. Those workers who claim therapeutic value for the flavonoids have not supported their claims with data obtained from well-controlled clinical studies. Until such studies are made, it must be concluded that the flavonoids are of little or no value in the treatment of disease.

Intramuscular Iron

On the basis of a small series of 10 patients with iron-deficiency anemia studied by A. B. Hagedorn (*J.A.M.A.* 164:1642, 1957), the following conclusions can be made: An effective iron preparation for intramuscular injection (Imferon) is now available. To date this intramuscularly given iron preparation has been found to be free from any toxic reactions, either local or systemic. Patients prefer this mode of administration over intravenous administration. The hematological response is satisfactory. It appears that the hemoglobin response is a little slower with intramuscularly than with intravenously given iron when the same dosage schedule is followed. The response possibly may be augmented when the does is increased. Parenterally given iron is not a substitute for orally given iron as a routine treatment for iron-deficiency anemia. However, parenterally given iron is a valuable addition to the therapy available in certain selected casse. When therapy with parenterally given iron is desirable, it would seem that intramuscularly given iron is preferable to intravenously given iron if for no other reason than that all intramuscularly given preparations are preferable to intravenously given ones when the clinical response is comparable because of the innate potential dangers of any intravenous therapy. In addition, there were no reactions of any sort to the intramuscularly given iron preparation used, in contrast to some minor reactions experienced with intravenously given iron.

Immunologic and Antibacterial Therapy

B. A. Waisbren reported in the June issue of "Antibiotics and Chemotherapy" on the combined use of gamma globulin and chloramphenical, first suggested by M. W. Fisher of Parke, Davis.

A combination of immunologic and antibacterial therapy—exemplified by the simultaneous administration of human gamma globulin and chloraamphenicol—should provide maximal curative activity in cases of severe infection, or in prolonged debilitating diseases that are responding slowly or not at all to conventional treatment.

In his experiments, Dr. Fisher infected mice with various disease-causing bacteria (species of staphylococci, Streptococci, Pseudomonas, and Proteus). The mice were then deliberately given subcurative doses of the antibiotic alone. They failed to survive. Gamma globulin alone was used in the same procedure and with the same results. Additional infected mice were then treated with both chloramphenicol and gamma globulin, each in subcurative amounts.

The observed results showed "survival percentages far above those expected for solely additive action." The curative action of the antibiotic was increased as much as 50 times by the addition of gamma globulin.

Of 10 patients, three included cases of osteomyelitis which responded strikingly to the combination treatment of Chloromycetin and gamma globulin after all other therapy had failed. Other cases, with similar responses noted, included pneumonia, endocarditis, and pyelonephritis.

A detailed chart on each of the 46 patients showed that favorable response to the combined therapy was noted in 31 or more than 67 per cent of the cases.

New Coccidiostat

A coccidiostat with more than double the effectiveness of any anti-coccidial agent now on the market or under investigation in the field is expected to be available for research investigation by mid-October, according to an announcement by Dr. Max Tishler, Vice President and Executive Director, Merck Sharp & Dohme Research Laboratories, Rahway, N. J.

Dr. Tishler revealed the finding of the new chemical compound at the Merck Poultry Nutrition and Health Symposium, held August 5th at the Chase Hotel in St. Louis. He told the 400 poultry scientists attending the Symposium that the discovery emerged from a far-reaching research program initiated in 1947 to find better coccidiostats. It was this same program which produced the highly successful coccidiostat, nicarbazin.

Despite the outstanding success of nicarbazin, preliminary results indicate that the new drug may prove superior, Dr. Tishler declared. He emphasized, however, that there are still several research hurdles to make before the drug can be definitely established as successful.

Nicotinic Acid and Hypercholesterolemia

Administration of nicotinic acid (niacin) orally in large doses (3 to 6 Gm. daily) to 24 patients with hypercholesteremia resulted in significant reduction in blood cholesterol levels in 16 (66.7 per cent) according to W. B. Parsons, Jr. and J. H. Finn (*J.A.M.A.* 165:234, 1957). Normal levels were attained in 6 of 8 patients followed for 30 weeks or longer and in 7 of 16 additional patients followed for at least 12 weeks.

Doses higher than 3 Gm. of nicotinic

acid daily were required in more than 50 per cent of patients. Significant reduction in blood cholesterol occurred with doses of 6 Gm daily in four of five patients whose levels had remained above normal after smaller doses.

Substitution of nicotinamide in equal dosage after 30 weeks of therapy with nicotinic acid in eight patients was followed by prompt return of blood cholesterol to pretreatment levels in every instance.

Flushing and pruritus, which occur after ingestion of nicotinic acid, subsided within the first week of therapy in nearly all cases. No serious side-reactions or toxic effects have been observed which can be attributed to nicotinic acid. Nicotinic acid proved to be effective in lowering cholesterol levels despite continuation of the patients' customary diets.

Chloramphenicol Acid Succinate

Two Howard University physicians reported that a new form of chloramphenicol, the acid succinate sodium salt, is safe and effective when used by aerosol (spray) and intramuscular injection, and that it is well suited to the treatment of chronic respiratory illness.

In a paper prepared for delivery before the Fifth Annual Antibiotics Symposium, Dr. Howard M. Payne and Dr. Robert L. Hackney, Jr. wrote that the compound can bring about "bacteriostasis and clearing of purulent sputum in the most severe emphysema case."

The solubility of the material makes it ideal for nebulization when dissolved either in water or a mucolytic agent. Observations indicate that three or four days of treatment are sufficient in the most severe emphysema case, and one or two treatments may suffice in the less severe cases.

Before they started the nebulization study, the doctors treated 15 patients with sub-acute or chronic respiratory illnesses with the compound intramuscularly.

"The therapeutic response observed in these patients," they reported, "was prompt. It was thought to be equivalent to that expected from the administration of 1,000,000 units of crystalline penicillin. The absence of toxic or allergic reactions is notable."

Fred R. McCrumb, Jr., Morrill J. Snyder, and William J. Hicken studied chloramphenicol acid succinate in the therapy of acute bacterial and rickettsial infections.

They reported that peak concentrations of the antibiotic appeared in adult patients within 30 minutes after it was administered intravenously, and within two hours after intramuscular injection. 135 lines

Effective levels of the new form of the antibiotic persisted for approximately six hours following the administration of a single one gram dose.

Drs. Natalia Felix Balkcom and B. M. Kagan reported on their study involving 103 seriously ill pediatric patients, treated with intravenous chloramphenicol. Clinical responses were evaluated in 85 of the patients.

Eighteen others were included for study of side effects and toxicity. These 18 had illnesses which could not be expected to be influenced by the drug.

Seventy-three of the 85 patients improved and 12 did not respond to chloramphenicol. Average duration of fever after the start of intravenous chloramphenicol in the improved patients, was three days.

Except for one patient, side reactions and toxic manifestations were mild and transient.

Dr. Sydney Ross, Dr. Jose R. Puig, and Edmund A. Zaremba, said the new form of the antibiotic "has the virtue of simplicity and ease of administration." They added that it has proven as effective as any of the other forms of chloramphenicol hitherto available in treating children with moderate to severe bacterial infections.

Studies with the new compound involved 39 children with bacterial infections such as H. influenza meningitis, Rocky Mountain Spotted Fever, bacterial pneumonia, and food poisoning. All were treated with the antibiotic administered by injection, along with 41 other pediatric patients who were included for evaluation of side effects and toxicity.

The three scientists reported chloramphenicol acid succinate is rapidly absorbed by the patient, produces high serum levels quickly and has the advantage of persisting therapeutic concentrations over a relatively long period.

Penicillin Reactions

Penicillinase, an enzyme that destroys penicillin in vivo as well as in vitro, has been used by A. M. Minno and G. M. Davis (*J.A.M.A.* 165:222, 1957) in the treatment of 42 patients who had reacted unfavorably to penicillin. The most frequent reactions consisted of fever, urticaria, pruritus, and severe arthralgia in hands, ankles, and feet. The penicillinase was usually given intramuscularly in doses of 1 million units in 2 cc. of sterile distilled water. In some cases relief followed dramatically within a few hours; in others the symptoms continued to become more severe for 24 to 48 hours after the injection. Its effects were hard to evaluate because the severity of the penicillin reactions was variable and because some patients with moderately severe symptoms recovered completely within 24 hours after treatment with a placebo. Relief from the pruritus followed promptly after the injection in nearly every case. Its only side-effects were local pain and tenderness at the site of injection.

Benactyzine Hydrochloride

Benactyzine hydrochloride was prescribed by F. J. Ayd, Jr. (*N.E.J.Med.* 257:669, 1957) for 37 ambulatory neurotic and 3 hospitalized psychotic patients. Eight of the 40 patients treated were considerably improved symptomatically, whereas 9 were partially improved and 11 unimproved, and 12 stopped the drug because of side effects. The improvement occurred in acute cases of recent origin with a good prognosis or in patients who were anxious to recover. The only major conclusion that could be drawn from this study is that the drug is not specific for any psychiatric disorder or symptom.

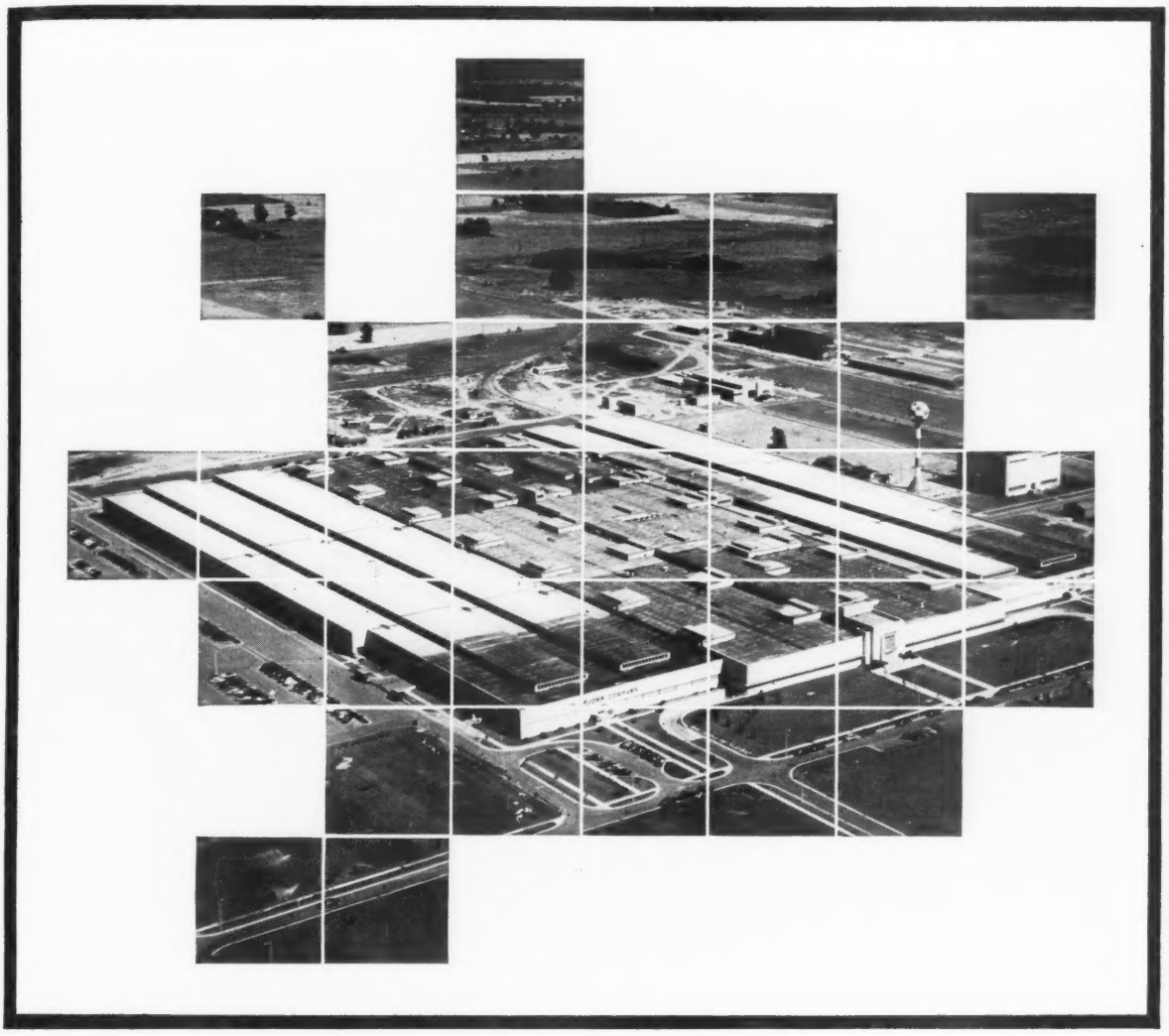
The medication caused a variety of side effects that are due to its anticholinergic action. These were not serious but were sufficiently annoying that 30 per cent of the patients refused to take the drug.

New Hallucinogens

Four hallucination drugs, have been isolated from plants chewed by Peruvian Indians, according to a report read at the American Chemical Society meeting in New York City.

The compounds, one of them never previously reported, were found in the "Ayahuasca" and "Yage" plants collected along the Napo River near Iquitos, Peru, according to Anita M. Paradies and F. A. Hochstein of Chas. Pfizer & Co., Inc. Natives chew these two plants as intoxicants, sometimes together.

Ayahuasca contains the active substances harmine and harmaline, and a previously undiscovered relative, tetrahydroharmine. Yage was said to yield dimethyltryptamine, a vision-causing compound also found in the seeds of another plant used for "cohoba" snuff by other South American tribes.



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Analytical Microscopy, Its Aims and Methods in Relation to Foods, Water, Spices and Drugs, *by T. E. Wallis, D. Sc. (Lond.), Second Ed., Illus., 215 pp., Little, Brown and Co., Boston, (1957), cloth,* **$5.50.**

The book provides an account of the methods of preparation of materials for microscopical examination and illustrates them by examples selected almost entirely from problems which have been presented to the author for solution during many years' experience as an analyst. The subjects described are such as cannot be completely solved by purely chemical investigation, but require the use of a microscope to observe morphological characters so as to complete the identification. This new edition has been revised to the extent that it is almost a new book.

Mathematics and Statistics, For Use in Pharmacy, Biology and Chemistry, *by L. Saunders, and R. Fleming, University of London, Published by direction of the Council of The Pharmaceutical Society of Great Britain, 257 pp., The Pharmaceutical Press, London, (1957), cloth,* **27s.6d. 1s postage.**

This book offers a short course in mathematics and statistics which assumes the student has very little knowledge of either topic. The text is based on the experience of the authors in training students for the honors degree in pharmacy of the University of London. Although primarily designed for pharmacists and students of pharmacy the book will be of value to practitioners and students of other applied sciences, including medicine, biology and chemistry.

Specification Standards, *produced by the Toilet Preparations Federation Limited, London, bound loose leaf, copies available at two guineas from C. A. Williams, Secretary of the Federation, Sackville House, 40 Piccadilly, London, W. 1.*

This set of standards for the raw materials used by the toilet and cosmetic industry have been compiled by the most eminent chemists in England under the Chairmanship of Lt. Col. J. K. L. Wenham. The specific raw materials covered in this initial volume include: White Oil, Glycerin, Borax, Boric Acid, Petroleum Jelly, Paraffin Wax, Beeswax, Amorphous Wax, Precipitated Chalk, Titanium Dioxide, Calcium Stearate, Talc, Propylene Glycol, Zinc Oxide, Magnesium Carbonate, Zinc Stearate, Magnesium Stearate, Triethanolamine. From time to time, other T.P.S. Standards will be added and those listed in the present book will be subject to constant review and revision to meet the advancing knowledge of medical and chemical science. The compilers of this work are to be congratulated in this first step forward for the benefit of the industry abroad.

The Structure of Nucleic Acids and Their Role in Protein Synthesis *Edited by E. M. Crook, 74 pp., The University Press, Cambridge, (1957), cloth,* **$3.75.**

This is the Biochemical Society Symposium No. 14 held at The London School of Hygiene and Tropical Medicine on February 18, 1956. Nucleic acids have long been known to be closely connected with the processes of growth and differentiation. The knowledge that these materials are also involved in protein synthesis is more recent. This symposium was organized to survey current research on the chemical composition and the structure of nucleic acids and to discuss the role played by them in the synthesis of proteins in organisms of varying degrees of complexity.

Pharmaceutical Emulsions and Emulsifying Agents, *by Lawrence M. Spallon, B. Pharm. (London), 138 pp., The Chemist And Druggist, London, (1956), cloth,* **7s6d.**

While the theory of emulsions remains what it was, numerous changes in the commercial availability of emulsifying agents are reflected in the text and in the table of emulgents and their manufacturers, in which nearly four hundred products are listed. Contents: Chapters I — How Emulsions Are Formed. II — Emulsifying Agents. III — The Formulation and Preparation of Emulsions. IV — Emulsifying Agents in Practice. V — Preservation and Storage of Emulsions. VI — Is a Preservative Necessary and What Preservative Should Be Used. Classified List of Emulsifying Agents and Other Substances Employed in Pharmaceutical Emulsions.

Rogers' Inorganic Pharmaceutical Chemistry, *by Taito O. Soine, Ph.D., University of Minnesota and Charles O. Wilson, Ph.D., University of Texas, Sixth Ed., 705 pp., Illus., Lea & Febiger, Phila., (1957), cloth,* **$9.50.**

In each chapter, a short historical sketch of the individual element under consideration precedes information concerning its occurrence, physical and chemical properties, tests for identity and purity, commercial manufacturing, and pharmacological action. This is followed by comparable treatment of each compound of pharmaceutical interest. A new introductory chapter, "Atomic Structure and Chemical Bonding," provides a brief review of pertinent principles. Basic principles are discussed, also, along with terminology, in a new chapter, "Solution and Solubility Phenomena." The chapter on Radioactivity and Radioactive Materials has been rewritten to bring it up to date from the standpoint of pharmacists, and several new sections in the Appendix have been added to this new edition.

Organic Reactions, Vol. IX, *Roger Adams, Editor-in-Chief, 468 pp., John Wiley & Sons, Inc. New York, (1957), cloth,* **$12.**

This is the ninth volume of a series which was started in 1942. The intention is to provide a compilation of all the important synthetic chemical reactions. To make these volumes authoritative as well as complete, each chapter is written by a man or men who have had special experience with the reaction they are written about. Each chapter in the series provides a comprehensive survey of a particular reaction and includes a general discussion of method, modifications, examples of applicability, special precautions, a detailed description of the procedure, expected yields, and other pertinent data. Tables have been compiled and are included in each chapter, listing compounds which have been prepared by or subjected to the reaction under discussion in that chapter.

Polyethylene, *by Theodore O. J. Kresser, Spencer Chemical Co., 217 pp., Reinhold Publishing Corp., New York, (1957) cloth,* **$4.95**

This is the first book primarily concerned with the applications of polyethylene. It covers: History, General Properties, Basic Chemistry, Manufacture, Processing. Applications: Film, Coatings, Pipe, Coated Wire, Moldings, Blown Bottles, Vacuum Formings.

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Perfumer's Shelf

Brazilian Bois-de-Rose Oil

The Brazilian *Pau Rosa*, or rosewood tree (*Aniba rosoedoro*, var. Amazonica, Ducke), grows in clayey soil in the Western Para and Amazonas regions. Its area of growth follows roughly the course of the Amazon and other great rivers, keeping some miles distant from the banks and well above flood-level. Commercial exploitation is at present confined within the following limits:

(a) On the left bank of the Amazon from the Trombetas river, in Para, to the Rio Negro and along the latter to the Colombian frontier;

(b) on the right bank of the Amazon from the Tapajos river, in Para, to Rio Javari, where it enters Peru, and beyond to the Ucaile river; and

(c) along the Madeira river to an area near Rio Marmelos, south-west of Manicore, and following the Purus river to its tributary, the Tapaua.

Trees stand alone and are spaced far apart, averaging one per hectare (2.47 acres). The more accessible reserves are too rapidly becoming depleted. A recently created commission for the economic development of the Amazon basin, endowed with ample funds, and assisted technically by the Northern Agronomical Institute, is now seeking means to improve conditions in the bois-de-rose industry and may lay out plantations, as it is already doing with rubber.

Meanwhile primitive processes in forest and distillery and lack of organization inflate production costs. After clearing the ground of undergrowth and creepers the trees are felled by axe, sawn by hand into one-metre lengths and carried on the shoulders of the men often over considerable distances, to the river banks to be loaded into lighters and conveyed to the mills for steaming and distilling.

The branches and small twigs of the trees are utilized, but no use has been made so far of the roots, though they contain a high percentage of essential oil. About fifty distilleries exist in the States of Amazonas and Para, all located in or near the rivers. The most important plants are equipped with four to six stills, employ forty to sixty men, and produce between 15 and 20 metric tons of essential oil annually. The average yield of oil per ton of wood is estimated at between 8 and 9 kilos, with a content of 70 per cent. of linalol, density of 0.864, and distilling at 194° to 200°. Recent tests in Sweden with Brazilian rosewood, applying improved techniques, yielded 15 kilos of oil per ton of wood and 400 kilos of cellulose.

The majority of Para distillers are still able to obtain their raw materials from relatively nearby sources, but their competitors in Manaus are supplied from more distant points and pay heavier transport charges.

In Amazonas and Para, associations of bois-de-rose oil producers, recognized by the State governments, have been organized to assist the industry, to make representations to State and federal authorities, and to fix prices. A joint report by those associations recently urged that, if the industry is to survive, it must be modernized. The report points out that the oil is distilled in fifty-one small, precariously equipped distilleries, in which production costs are inflated by avoidable wastage. If the oil is to compete in international markets, processing should be concentrated in four distilleries, and the work should be done by a co-operative organization financed by the Commission for the Economic Development of the Amazon Basin.

"Special care must be taken," the report continues, "to improve the quality of production. The natural oil can be used to give *bouquet* to toilet soaps, as it is not decomposed by the alkalis employed. This use is at present limited, however, by the fact that the perfume of bulk of the oil we export is not sufficiently delicate, as it is distilled under improper conditions, with inadequate pressures and incipient fermentation processes. We estimate that annual sales could be increased by 200 tons if the quality of the oil were improved."

Exports to the United Kingdom increased from 77.2 tons in 1955 to 47.7 in the first four months of 1956, while exports to the United States declined from 198.3 to 54.0 tons. Other constant buyers are France, Germany, Holland, Japan and Switzerland.

The above are official statistics and do not include the appreciable quantities of bois-de-rose exported clandestinely each year across the frontiers of Peru and the Guianas and reshipped from Iquitos, Cayenne and Paramaribo to the United States and Europe. At a recent government inquiry it transpired that Peru, whose maximum output is 50 tons annually, exported 170 tons in 1956, while the Guianas, which do not produce bois-de-rose, exported 50 tons.

Although the aromatic properties of bois-de-rose are used in industry only one-fifth of world production is so employed. Manufacturers use the remainder for the isolation of linalol (of which the oil contains about 80 per cent.) and from linalol to prepare various derivatives the chief being linalyl acetate. While the oil and more particularly linalol and linalyl acetate are extensively used in soap perfumery they also find application in perfuming a wide range of toiled preparations.

Merchants handling the oil in London at the present time are satisfied with the quality received, their valuation being assessed on the linalol content. On the other hand users of bois-de-rose as such for perfumery purposes are less pleased, contending that the oil is much poorer than it was before the war. They attribute the decline in quality not to deliberate sophistication, but to the increasing difficulty at origin of getting the right trees for distillation. Many trees similar to the *Pau Rosa* are used now and do not yield the same quality of oil.

As with all natural products, much research work has been expended in an attempt to produce linalol by synthetic means, and a measure of success has now been achieved. A plant has been built in the United States to produce synthetic material. Some European

Floramoss

Suggestive of woodland odors, this delightful fragrance is derived from a unique blend of light brilliant florals to which has been added a fresh green character for modification. This, with other additives, results in an attractive bouquet of intense sweetness and appeal. A strong, heady, provocative fragrance with tremendous lift and tenacity.

Vibrato

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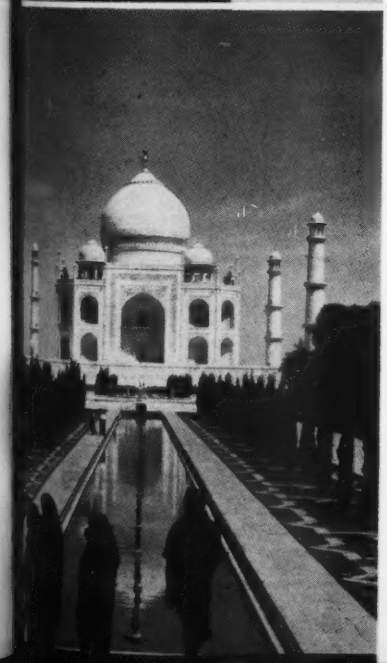

Taz-Mah

In the skilled blending of scents that constitute this perfume's lovely top-note, you'll find only faintly concealed the underlying warmth and richness of its basic oriental character. This is a fragrance that has beauty, seductive charm and elegance.

HÓALÓHA

Truly a "beloved companion" as its name implies—an appealing, long-lasting, semi-oriental fragrance for extracts, toilet waters and colognes. A unique blend of spices on a woody, resinous foundation, lightly touched with rose.

Éclatant

A typically French type of perfume—stylish, elegant, distinctive. Has a warm, woody, balsamy base attractively topped with smoothly blended florals. The exquisite character and quality of this fragrance suggest unlimited potentialities for sales.

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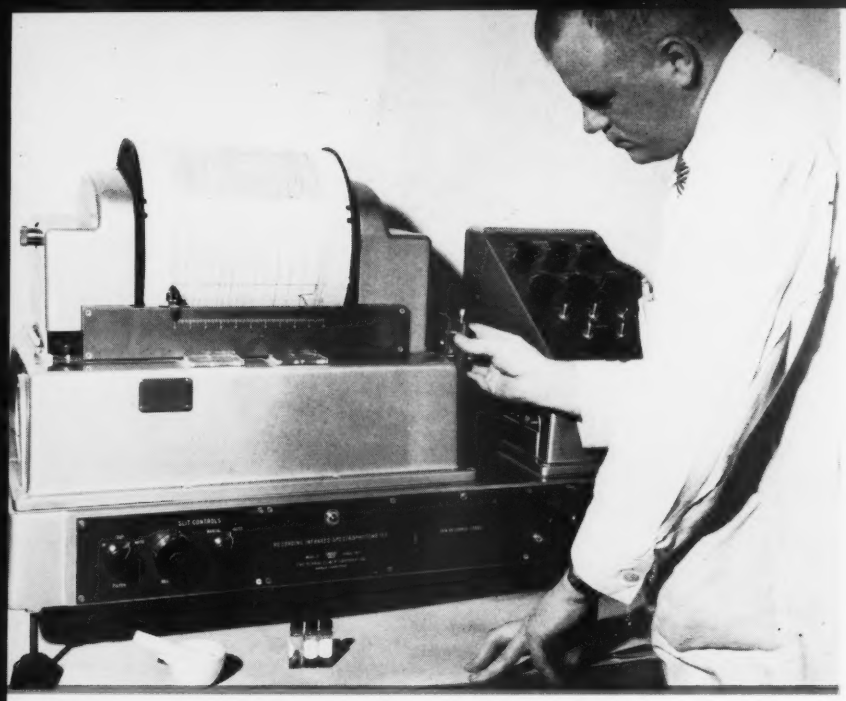

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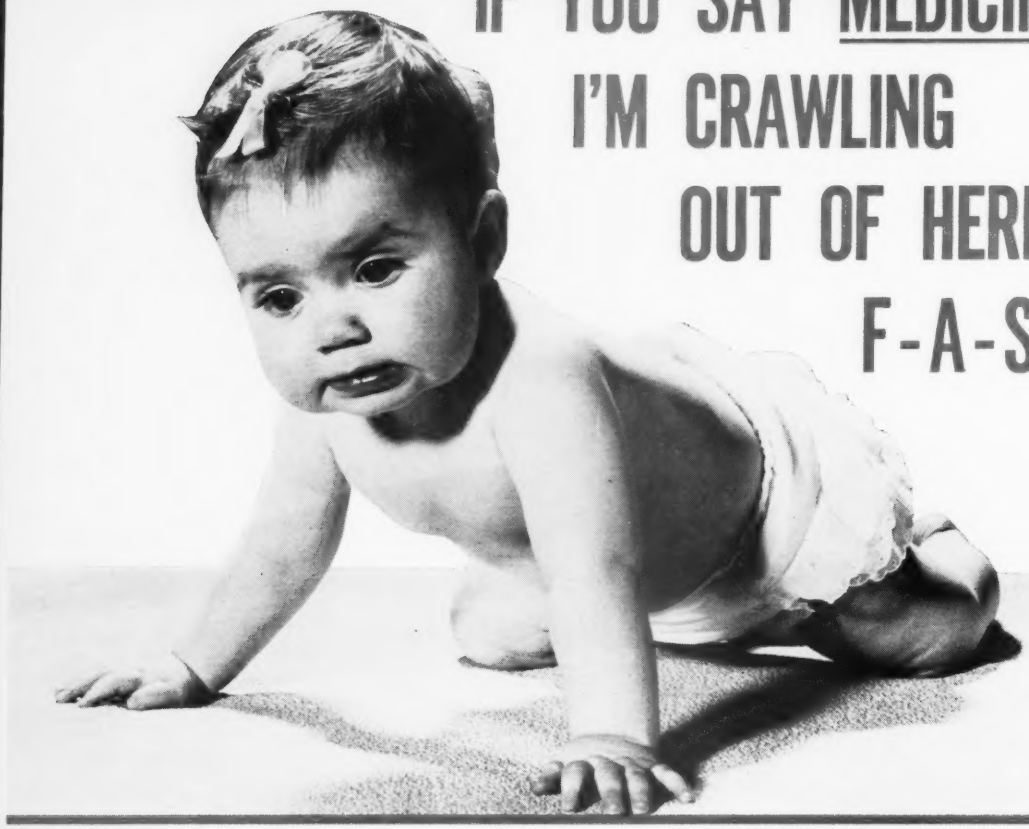

"That's one word I just hate to hear mentioned, because for me it usually means trouble. Mind you, I don't object to nice-tasting medicines, but when Ma or the doctor force me to take these nasty, bitter remedies (which—according to them—are always "for my own good") that's when I act real mean and mad. Gee, some of the stuff they have now to make us kids healthy really does taste good, and whenever I take that kind of medicine, I actually do feel healthier. But why can't they make all medicines taste good?"

* * * *

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countries are also working actively along similar lines. The future of the oil will therefore largely depend on whether the Brazilian producers are able to compete in price with the synthetic material.

Soluble Perfume Oils

The demands of industry on numerous occasions call for the use of perfume oil in a medium in which the oil itself is insoluble. Examples of products requiring solubilizer for the perfume oils (or flavor oils, as the case may be) are hairwaving lotions, mouthwashes, some aftershave solutions, children's toilet water, as well as any number of non-cosmetic preparations having high water content.

Traditionally, soap was used as the solubilizing agent. Later, many sulfated vegetable oils, nonionics (particularly in the polyoxyethylene series), and in certain instances, the cationics were called into play.

The introduction of a non-soluble perfume oil into an aqueous solution with the aid of such a solubilizer does not result in a true solution, but only an apparent one. Rather, small colloidal particles (or micelles) are dispersed in a form that, to the eye and on first glance, is an apparent solution.

Various commercial perfumes have been prepared and called water-soluble perfumes, that are mixtures of solubilizer and oil in predetermined proportions. Such mixtures should preferably be prepared to meet the specific demands of the individual product. For example, a lilac fragrance might consist of a carefully blended mixture of terpineol, terpinyl and linalyl acetates, phenyl ethyl alcohol, styrax, cinnamic alcohol, and other ingredients, and as a whole this specific lilac might be insoluble in an aqueous solution, even at a level of 0.05 per cent. To make a solubilized lilac, one might take, for example, 30 per cent of the above-described oil and 70 per cent of polyoxyethylene sorbitan monolaurate.

The use of a solubilizer offers cretain problems, difficulties, and disadvantages, which are frequently overlooked. These are:

1. Since the solubilized oils are not brought into true solution, creaming, separation, precipitation, etc., may result on long standing.

2. The solubilizer may add such undesirable qualities to the finished preparation as foaming, bitter taste, or sticky feel.

3. The solubilizer may increase the susceptibility of the preparation to bacterial decomposition.

4. The solubilizer may behave in inverse solubility, showing better solubility at lower temperatures.

5. The presence of solubilizer may cause film-formation, resulting in clogging of very minute orifices.

6. Solubilizers may inactivate otherwise active ingredients, as use of nonionic solubilizer in a system containing phenolic-based bactericides.

7. Solubilizers are by their nature contra-indicated in certain products where they may cause solubilization of other film-formers that would otherwise remain on the hair shaft.

On the other hand, the advantages of solubilizers are many. Most of the difficulties enumerated above can be obviated by the proper choice of agent, and frequently by choice of a combination of solubilizers.

Perfume oils themselves are mixtures of numerous essential oils and of synthetics and isolates. While essential oils high in terpenes have sometimes been used in terpeneless form in order to increase solubility, Moore and Bell pointed out that the terpenes plus the terpeneless oil give better solubility effects than the original oil, because of the removal of sesquiterpenes, waxes, and other ingredients.

Of synthetic aromatics used for good water solubility, phenyl ethyl alcohol is best known, with grades of this material for which claims of 2 per cent solubility are made. Actually, in cold tap water (soft but untreated), the best commercial grades of PEA are soluble to an extent far below the 2 per cent figure. Numberous other synthetics are available with solubilities of between 0.1 and 0.8 per cent.

In the laboratories of Standard Aromatics, studies were made of the behavior of perfume oils, with and without solubilizers, in water and in hydroalcoholic solutions containing a minimum amount of alcohol and at various temperatures. By utilizing new materials not previously used in perfumery; by using specially prepared fractions of certain oils to give maximum solubility; and by choosing combinations of materials with slight solubility in water in which the combined aromatics were more soluble than the sum of the individual ingredients, several new perfume compounds of unusual solubility properties were prepared.

The soluble compounds show certain immediate advantages: no cost of solubilizer; removal of a potential cause of instability; ease of preparation, chilling, filtration.

However, there are severe limitations on the types of fragrances that can be prepared and that are water-soluble in the true sense of the word. The true solubles are made from only about thirty raw materials, instead of the several hundred that the perfumer may ordinarily choose from.—Standard Aromatics.

Ocotea Fragrantissima Ducke

The main components of the essential oil of the very rare and exceptionally odorous *Lauracea* from the Amazon region *Ocotea fragrantissima* Ducke are safrole and eugenol.

Ducke described in 1938 a new species of the family *Lauraceae* which he named *Ocotea fragrantissima* Ducke. Only three specimens of this plant, a large tree, were then encountered by the famous Brazilian botanist in the region of the Curicuriari River, a tributary of the Rio Negro (State of Amazonas, Brasil).

The wood sample was reduced to small shavings and submitted to water distillation with continuous cohobation of of the distilled water. Thus it yielded 1.8 per cent of a faintly yellow essential oil with an odor recalling sassafras, which had the following analytical characteristics: $d_{25}^{25} = 1.0481$, $n_D^{25} = 1.5057$, α_D = very small or 0 (c = 5.4452 in chloroform), acid number = 4.3, ester number = 28.7, ester number after acetylation with acetic anhydride and sodium acetate = 103.2, phenol content determined with 3 per cent aqueous sodium hydroxide solution = 11.1 per cent.

The acid portion was a yellow liquid and possessed a strong odor of cloves. Functional qualitative analysis revealed the presence of phenolic hydroxy, methoxy and allyl groups. Upon reaction with benzoyl chloride in pyridine it gave a derivative which, after recrystallization from ethyl alcohol, melted at 67-69°C. Hence this fraction was mainly eugenol.

The neutral portion was a nearly colorless liquid with a strong sassafras odor. It was distilled under vacuum. The fraction collected at 98-103°C, 10 mm Hg, contained the allyl group. The product obtained by oxidation of this fraction with alkaline permanganate was purified by sublimation at 110°C. Methylenedioxy and carboxylic acid groups were present. Crystalline form and melting point, 227 z 230°C, showed it to be piperonylic acid. Hence the neutral fraction contained safrole.—O. R. Gottlieb, *P.E.O.R.* 48: 386,1957.

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Skin Research

Measurement of Skin Oiliness

A paper given before the Scientific Section of the Toilet Goods Association "Practical Measurements of Epidermal Emolliency and Emollient Penetration," is actually devoted to the description of a method of determining the oiliness of the skin, which is not the same thing. Emollience is skin softening action and emollients are skin softening agents, which may or may not be oily and fatty substances. The method is based upon the measurement of stain caused by the reaction between osmic acid and unsaturated compounds and thus cannot give any useful indications as to the presence, for example, of saturated triglycerides that make up an important part of the surface lipids of the skin. As far as we know, little can be said about the variation if any in the composition of the surface skin fats and oils from person to person, or, in fact, for the same subject at different times or when different foods are consumed. Therefore the measurement of an unsaturation factor rather than total lipids may tend to reduce the significance of the data. Furthermore, one element of the procedure is the blotting of the skin with lens paper to pick up surface fats and this is not necessarily a quantitative method. Further investigation is probably necessary to ascertain the advantages of this staining method, if any, over swabbing the skin surface with cotton saturated with a fat solvent such as ethyl ether or petroleum ether and isolating and weighing the fats and oils. This still would not be a method of measuring emolliency, however.

The method was used to test the effect of creams and oils containing estrogen, progesterone, testosterone and hydrocortisone applied to the skin for a two week period. The estrogen was not further characterized. The estrogen cream was reported as not depressing emolliency, but had an appreciable plumping effect on the epidermis while "the hydrocortisone product apparently has no epidermal emollient or morphological effects." Progesterone and testosterone both apparently greatly increased the surface oil, in accord with theory indicated in Rothman's book and with experimental animal data (Reiss and Gellis, *J. Invest. Dermatol.* 12, 159,1949) and we might add, in accord with the suggestion for cosmetic application made in the article "Sebaceous Gland Secretion" that appeared in "Drug and Cosmetic Industry" in December 1955. The final paragraph of that article reads:

"Progesterone, although an essential female sex hormone, has a low order of activity in terms of the size dose required and it has a rather wide dose range within which it can be administered with little or no side reactions. Subject to a research program proving its ability to be absorbed by the intact skin, to act locally on the sebaceous glands without being absorbed to an appreciable extent into the blood stream and lack of harmful activity when used on either intact or broken skin, progesterone may well prove to be a useful ingredient in creams to correct excessively dry skin."

Elasticity of Human Skin

L. H. Jansen and R. B. Rottier (*Dermatologica*, 115:106,1957) measured the elasticity of human skin and showed that the elasticity was independent of age or sex. Since the skin came from the abdomens of cadavers, it is questionable whether these findings can in any way be related to the properties of live human skin in its normal position. A 10 by 10 cm. patch is excised from the abdominal area of cadavers immediately after death to 6 days later, subcutaneous fat is removed mechanically, 0.5 cm. strips were cut from the frozen skin and were kept in an atmosphere saturated with water vapor until used. The extensibility of the strip was determined by measuring the change in length when weights were applied to one end of the strip. Calculations were applied to correct for different skin thickness. It seems to us that this is an interesting exercise, but cannot provide much data that can be validly applied to the elasticity of living skin.

Soluble Hydrocortisones

According to C. C. Smith (*J. Invest. Dermatol.* 28: 455, 1957), although one might theorize that more soluble forms of hydrocortisone would be effective, topically, in smaller concentrations than either hydrocortisone (free alcohol) or hydrocortisone acetate, such was not the case in this study. Hydrocortisone diethylaminoacetate hydrochloride ointment (½ per cent) was found to be slightly less effective than hydrocortisone (free alcohol) ointment (1 per cent) and hydrocortisone hemisuccinate sodium ointment (½ per cent) was not found as effective as hydrocortisone acetate ointment (1 per cent). The results of the study also indicate that hydrocortisone diethylaminoacetate hydrochloride ointment (½ per cent) is probably more effective than hydrocortisone hemisuccinate sodium ointment (½ per cent).

Similar studies have been made in which prednisolone diethylaminoacetate hydrochloride ointment (¼ per cent) was compared with hydrocortisone ointment (1 per cent). Of the 44 patients compared in this study the hydrocortisone ointment was more effective in 14, equally effective in 19, less effective in 8 and equally ineffective in 3 as compared with the prednisolone diethylaminoacetate hydrochloride ointment.

Skin Hydration

The observations reported by W. C. Randall and C. P. Peiss (*J. Invest. Dermatol.* 28:435,1957) strengthen the contention that during hydration, water is temporarily stored in the outer layers of the epidermis. This in turn increases the vapor pressure of the skin and re-

sults in more rapid evaporation. Coincident suppression of sweating is related to poral closure by the mechanical swelling of hydrophylic colloid (keratin) surrounding the poral orifice. O'Brien has described a "keratin ring" in the walls of the most superficial convolutions of the sweat duct and its poral opening onto the skin surface. This architectural arrangement of the duct and pore has been carefully studied by other investigators.

Such swelling of the horny keratin material in palmar and plantar skin was suggested several years ago by Rothman. There is some similarity between the phenomenon of sweat suppression during immersion with that occurring in the sweat retention syndrome. In many instances, the decisive factor in retention is the formation of a keratin plug at the poral orifice. Perhaps very prolonged hydration would produce similar architectural changes, but thus far recovery of normal sweating responses has followed promptly upon exposure of the hydrated surface to room air.

Gelatin and Brittle Nails

Forty-three of fifty patients with brittle nails who ingested gelatin daily for three months showed improvement in their nail structure according to S. Rosenberg et al. (*A.M.A. Arch. Dermatol.* 76:330, 1956).

Eight out of eight cases of recurrent brittle nails could again be controlled by gelatin.

Gelatin improved psoriatic nails in 5 cases out of 12.

In onychomycosis and other pathological conditions of the nail gelatin was of no appreciable help.

The cause of brittle nails still remains obscure, as does the mechanism of the action of gelatin in these cases.

Recently Muehrcke showed that hypoalbuminemia has a definite effect on fingernails. He found in his series of nephrotics and others with serum albumin less than 2.2 gm. per 100 ml. that 74 per cent developed two well-marked white bands. When these patients were infused with human serum albumin, the white bands disappeared. In a previous study it was noted that a nephrotic patient with hypoalbuminemia showed good and rapid improvement in her brittle nails after gelatin. Gelatin contains all the amino acids of albumin except tryptophan. It may serve as a good partial replacement source of amino acids in hypoalbuminemia. No attempt was made in this study to determine serum albumin levels in ordinary brittle nails.

This investigation again bears out the concept that brittleness of nails has no relation to Ca and P metabolism or hyper- or hypothyroidism.

The work of Lewis has shed some light on the anatomy of the nail and its genesis. He has demonstrated three separate nail layers, each derived from a different portion of the perionychium. This would imply a natural lamination effect even in normal nails. Perhaps this explains why, in brittle nails, the first layer to split off is the thin covering cuticle, while the deeper layers break off with increasing difficulty, and also explains the terracing effect seen in brittle nails. However, there is no explanation as to the mechanism that binds the layers together in normal nails and allows them to separate in brittle nails. There is no definite evidence of a "cement substance" holding these laminae together.

Results with psoriatic nails in this investigation were not as good as in previous studies. However, the cases reported here were in general resistant, long-standing, chronic clinic cases, some with very widespread lesions. Cases previously reported were of the type generally seen in private practice, earlier in the disease and in patients more likely to be diligent and fastidious in their treatment.

Tyrosinase in Melanocytes

Pure epidermal sheets of normal white human skin were incubated in tyrosine by G. Szabo (*A.M.A. Arch. Dermatol.* 76:321,1957). In most cases pigment granules were formed within the melanocytes. Dopa was used as control substrate.

The number of these tyrosine-positive melanocytes varied from region to region in the following decreasing order: cheek, forehead, ear, nasal mucosa, scrotum, penis, neck, chest, arm, and thigh.

In strongly positive regions the number, shape, and distribution of tyrosine-positive and dopa-positive melanocytes were the same.

The order of body regions with decreasing melanocyte density is similar to that of decreasing tyrosinase activity.

The tyrosinase reaction is more sensitive in detecting the physiological activity of melanocytes than the dopa reaction. Within the same region the perifollicular and the "giant" melanocytes are the most active dendritic cells.

It is postulated that several factors may be responsible for this regional variation in tyrosinase activity: (*a*) exposure to solar rays; (*b*) intrinsic differences of melanocytes within the same body, more active cells being present in the genital regions; (*c*) varying degrees of inhibition. Further (*d*) a high population density may also enhance tyrosinase activity.

Skin Lipids

Assays were carried out by F. Herrmann et al. (*A.M.A. Arch. Dermatol.* 76:282, 1957) in lipid samples from 21 different areas of the skin surface of different subjects to ascertain (*a*) the lipid quantity by weighing; (*b*) the spreading index of the lipids, i.e., the square centimeter area of water surface covered by 1γ of lipid in a sample ("monolayer method" of K. K. Jones), and (*c*) the acid number of the lipids.

The spreading index was paralleled by the acid number, inasmuch as lipids from a given skin area in subjects who showed a high spreading index for this area generally showed also a high acid number, while the acid number was low in lipids collected from the analogous area in subjects who showed a low spreading index for this site. Similarly, in one and the same subject a higher acid number was, as a rule, obtained in samples from the skin areas for which the spreading index was high than in samples from the areas for which the index was low.

During the warmer season, the spreading index distinctly tended to increase. In general, this increase was higher for skin areas which yielded a low index and tended to dry out during the cool period than for skin areas which also during this period yielded a high index and tended to show moisture.

The differences obtained for different skin areas, as well as the seasonal differences, appear to be largely due to differences in the liberation of free fatty acids from their esters by esterase activity. The indications are that the different degrees of enzymatic activity to a great extent depend upon the distribution of the microbial flora on the skin.

Systemic Absorption of Prednisolone

D. N. Tschan and L. Adoni (*J. Invest. Dermatol.* 28:385, 1957) selected 20 patients with various dermatoses to observe the effect of inunctions of prednisolone ointment. In every patient—with one exception—showing an eosinophile count of 100 or more, there was a drop in the number of eosinophiles within a period of four hours following inunction of prednisolone.

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(*Continued from page 456*)

represents such a combination, but utilizing a different screening principle. Revisions of this formula have been suggested by Green[50] and by Hammarlund[51].

Formula 11 specifies an opaque excipient with optional sunscreens in the required concentrations.

Some Pathologic and Allergic Aspects

While sunburn represents a pathologic entity, it may also act as a precursor of less frequent and less familiar conditions such as *xeroderma pigmentosum*, *eczema solare*, *lupus erythematosus*, and others, with additional factors entering into play to produce new pathologic entities.

In the case of severe sunburn, the pain is intensified by body movement and friction, no matter how slight, against clothing or bedding. Systemic absorption of toxic matter from injured tissue produces toxemia whose symptoms may be fever, chills, edema, nausea, tachycardia, headache, or a combination of any of them. While blistering may be regarded as a natural defense against too rapid an absorption of the toxic material, the exposure of denuded tissue caused by bursting blisters may open the way to local or systemic infection. Ordinarily, a sunburn does not affect the skin's tanning capacity; however, in particularly severe cases, the pigmentogenic cells may be destroyed or altered, causing a loss of capacity to tan for a year or even for several years.

At this point, brief reference may be made to solar urticaria which in its symptoms compares with the urticarial hypersensitivity to certain foods and drugs, as well as to physical stimuli (mechanical, heat, and cold). According to Beal[52], the spectral sensitivity in solar urticaria lies between the wavelengths of 2967 and 3341 Angstrom, with a maximum at 3131 Angstrom; it is different, therefore, from the erythemal range and its maximum.

Antihistaminic drugs, such as Benadryl, are protective against the urticarial reaction and, with their aid, tolerance to the offending radiation can be acquired following exposure to gradually increased radiation periods, permitting eventual discontinuance of antihistaminic medication.

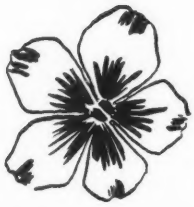
As in the case of numerous other chemicals applied externally, so also in that of sunburn preventives, individual cases of hypersensitivity have been encountered. Meltzer and Baer[53,54] refer to allergic eczematous dermatitis caused by an ester of *p*-aminobenzoic acid. It is of interest that sensitization by this substance was preceded by one to benzocaine and to a sulfonamide (possibly sulfaguanidine); hypersensitivity to aniline, aminoazobenzene, and paraphenylenediamine was also present. Accordingly[7] such a case of "cross-sensitization" indicates the possibility of allergic dermatitis from a sunscreen of the *p*-aminobenzoate class in those individuals who are hypersensitive to *p*-phenylenediamine, to aniline dyes, to sulfonamides, or to local anesthetics based upon the aniline structure.

Photosensitization may be induced by a sunburn preventive, as shown in the case of monoglyceryl *p*-aminobenzoate by Satulsky[55]; but such exceptional cases do not detract from the value of *p*-aminobenzoic acid or of its derivatives as sunburn preventives for the normal skin[56], as emphasized by Bell and Mazzone[57] who advocate the use of sodium *p*-aminobenzoate as a sunscreen (either in an aqueous-alcoholic or in a vanishing cream type of vehicle).

On the other hand, a chemical selected as a sunscreen should have undergone adequate pharmacologic and toxicologic study in order to establish its safety for the normal skin, following prolonged usage. The conclusion as to such safety should be based upon the established absence of (a) systemic toxicity (following application to intact or damaged skin), (b) primary irritation, and (c) sensitization. Draize[58] demands an eightfold margin of safety with respect to the acute and the sub-acute dermal toxicity and the sensitization potential of sunburn preparations. (On the strength of these criteria, he considers hydroquinone to be unsuitable for use in sunscreen preparations since it was found to cause atypical dermatosis in rabbits which was aggravated by irradiation with ultraviolet rays.)

Berlocque dermatitis is the name of an irregular discoloration of the skin which appears occasionally upon exposure to the sun of a skin previously sprayed with eau de cologne[59,60]. At first, bergamot oil, an ingredient of eau de cologne, was held responsible for this phenomenon. Later other essential oils, such as those of lavender, lemon, orange, lime and rosemary were implicated[61]; one or more of these oils may occur in eau de cologne formulations of the original (J. M. Farina) variety. A similar reaction has been produced experimentally by the application to the skin of some of these oils, when followed by irradiation.

The mechanism of such pigmentary changes, as induced by either natural or artificial light, is not well understood. It is thought to depend upon the production of a local hypersensitivity to blue or violet light. Since bergamot oil may contain some chlorophyll in solution, it was assumed at first that this plant pigment was involved, possibly by way of photosensitization. Copper which occurs in trace quantities in essential oils (from copper containers in which these oils are shipped or kept) has been mentioned as a factor in causing this form of pigmentation[62], but probably without justification[63]. Recent experiments by Lerner, Denton, and Fitzpatrick[64] indicate that the psoralens present in a variety of natural oils (including the oils of bergamot and of other citrus fruits) are responsible. Actually, local application of 8-methoxypsoralen to normal skin, followed by exposure to sunlight, causes erythema and hyperpigmentation, as has been known for some time[65]. A new effect has been observed by Lerner[66], viz., that



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oral intake of 8-methoxypsoralen followed by exposure to sunlight increases the ability to tan; this is assumed to represent a potentiation of tanning capacity.

Klaber[67] suggests the adoption of the generic term phyto-photodermatitis for skin reactions caused by external contact with plants or plant products and subsequent exposure to light. Kuske[68] found that five plants, viz., rue, parsnip, cow parsnip, fig and angelica, contained a common photosensitizer, viz., furocumarin with an absorption band of 3340 to 3660 Angstrom.

An exhaustive review of skin diseases relating to light sensitivity has been contributed by Lamb, Schelmire, Cooper, Morgan and Keaty[69], and by Kesten and Slatkin[70].

Brief reference may be made at this point to the relationship between the sun's radiation and skin cancer. The maximum of carcinogenic action is shown by wavelengths between 2900 and 3000 Angstrom, i.e., by the same range which exhibits maximal erythemogenic capacity[71]. The production mechanism of cancer by radiation is not clear[72]; in any case, it does not involve the conversion of skin sterols into carcinogenic agents[73]. There is impressive statistical evidence in support of the contention that the incidence of cutaneous cancer among the white population of the U. S. increases from north to south[74].

Factors in Preventing Sunburn

As a rule, a 20-minute exposure of the unprotected average skin to June sunlight, around noon, will produce a minimum perceptible erythema; upon a 50-minute exposure, vivid erythema will result. The latter may be regarded as the maximum noninjurious skin reaction; at this point also, the stimulation of pigment formation is probably at its peak. Beyond it, there is the painful burn resulting from an exposure of 100-minute duration or longer, and the blistering burn in the wake of a 200-minute exposure.

With this as a premise, it is possible to correlate a number of pertinent variables in order to arrive at an answer to the question as to what constitutes adequate skin protection by means of a sunburn preventive. Obviously, the effects of sunning should not go beyond the stage of a vivid erythema. Since an unprotected average skin develops this condition after about 50 minutes of exposure to the noon sun in Summer, it would appear that a shielding film transmitting, e.g., 20 per cent of the sun's erythemogenic radiation would permit a theoretical exposure of over four hours. However, certain other factors must be considered in this picture. Thus the average erythemal intensity of the solar radiation, e.g., between the hours of 10 A. M. and 2 P. M., is less than the maximum for the noon hour; secondly, the changing position of the sunbather prevents continuous irradiation of the same area of the anatomy for several hours. On the other hand, the proximity of reflecting surfaces, e.g., of water or snow, may intensify the erythemal effect; and, as mentioned before, the concomitant infrared radiation increases the skin's sucseptibility to burning by stimulating hyperemia. There are individual variations, often of significant magnitude, as, e.g., between blondes and red-heads on one hand, and brunettes on the other. Skin tolerance changes as the sunning season progresses when the skin's defenses are bolstered by thickening of the epidermis. Other factors in the erythemal thresholds of individual cases are those of sweating, wetting the skin with water, etc.

For the sake of completeness, Table 6 reproduces a set of figures which correlate the exposures to the ultraviolet radiation of a mercury quartz lamp shielded by a Corex D filter, with the corresponding exposures to June sunlight, and with maximum tolerated exposures.

Table 6
CORRELATION OF SKIN TESTS WITH ESTIMATED PRACTICAL EXPOSURE PERIODS

A (minutes)	B (minutes)	C (minutes)	A (minutes)	B (minutes)	C (minutes)
20	96	240	9	78	194
19	95	237	8	78	184
18	94	235	7	70	175
17	93	232	6	65	162
16	91	228	5	60	150
15	90	225	4	53	133
14	88	221	3	45	113
13	87	217	2	34	85
12	85	212	1	24	60
11	83	207	0	0	0
10	80	200			

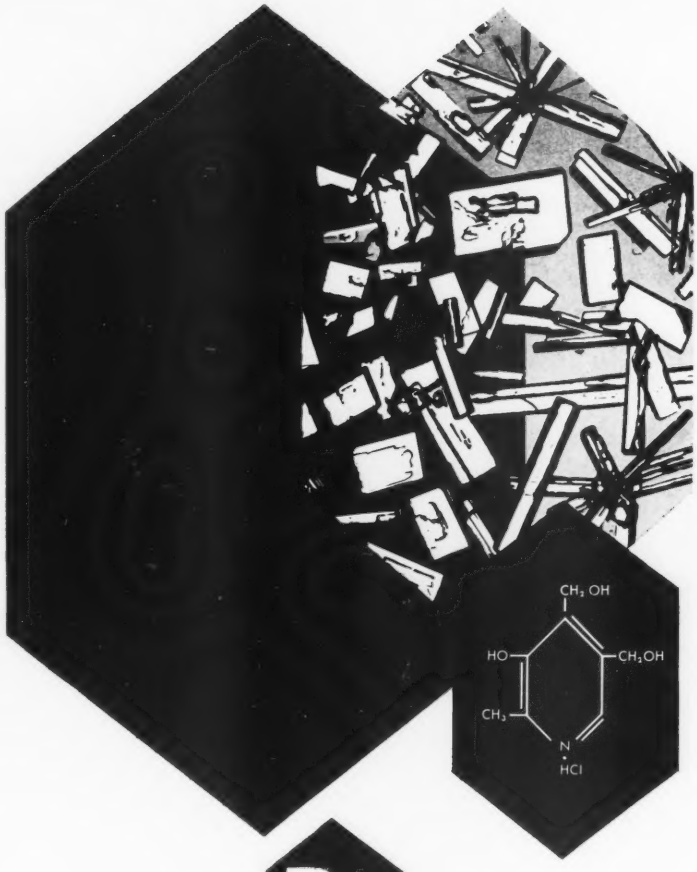
A= exposure to the U. V. radiation of a mercury quartz lamp shielded by a Corex D filter.
B= corresponding exposures to June sunlight.
C= maximum tolerated exposures.

Thus, if a minimum perceptible erythema is produced by the mercury quartz lamp upon a *protected* skin, e.g., in 14 minutes (an *unprotected* skin would have developed a minimum perceptible erythema following 1 minute of irradiation), a comparable effect would be produced by June sunlight in 88 minutes; in this case the maximum length of a safe exposure whose effect would not go beyond a vivid erythema, would be 221 minutes or almost four hours.

Of course, it would not be desirable, as a rule, to make the cosmetic sunburn preventive so completely protective as to eliminate some erythemic skin response following exposure to the sun; as pointed out before, adaptation of the normal skin to sunning, as well as a coat of tan are acquired gradually as a result of judicious exposure followed by a moderate erythema.

Notes on the Treatment of Sunburn

While the several preceding paragraphs refer entirely to the prevention of sunburn by reduction of the intensity of the sun's ultraviolet radiation, a few remarks may be in order here on the subject of treating sunburn which has been contracted through carelessness. Of course, serious burns require a physician's attention. Less serious but painful conditions call for the topical use of palliative preparations, preferably of liquid or low-viscosity character in order to avoid further irritation by pulling the skin in the process of application; the addition of a mild antiseptic will minimize the risk of infection. Tannic acid solutions



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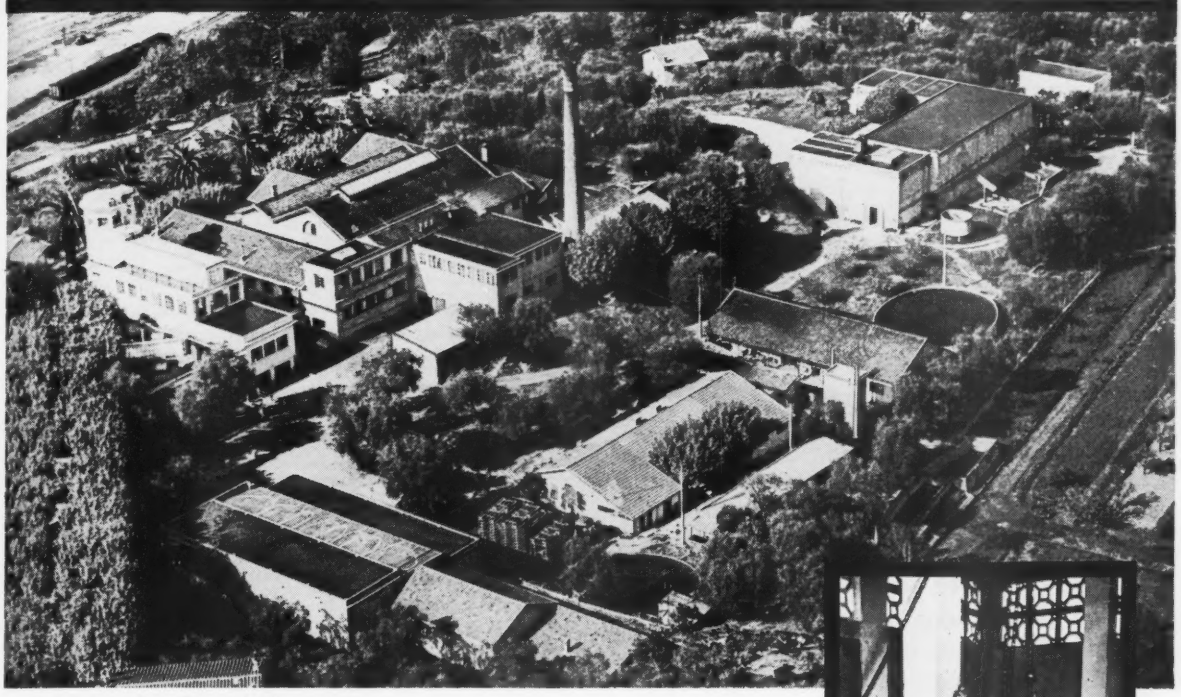

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which at one time were recommended for the treatment of different burns, including sunburn, no longer enjoy medical approval. While some oil-in-water emulsions are both cooling and soothing in action, oils and greases are contraindicated because they tend to block the escape of heat, and also because they may interfere with the action of any analgesic and antiseptic ingredients.

For the sake of illustration, several simple palliative mixtures are shown in Formulas 12 to 14.

Formulas of Palliative Mixtures for the Treatment of Milder Cases of Sunburn

12. Cooling Lotion (Calamine Type)

Zinc oxide	15.0 per cent
Talc	15.0
Bentonite	5.0
Propylene glycol	5.0
Water, distilled	6.0

13. Astringent Lotion, Mild

Zinc sulfocarbolate	3.0 per cent
Propylene glycol	5.0
Camphor water	92.0

14. Cooling Emulsion

Mineral oil, light	10.0 per cent
Lanolin	2.5
Triethanolamine oleate	5.0
Propylene glycol	2.5
Water, distilled	80.0

Labeling

To the extent that a given product is represented as a preventive or a treatment for sunburn, it is a "drug" within the meaning of this term as defined by the Federal Food, Drug, and Cosmetic Act, and must be labeled accordingly. Among other things, the label of a drug product is required to state the active ingredient or ingredients to which the prophylactic or therapeutic effect is attributed[75]. Thus, a sunburn preparation may be both a "cosmetic" and a "drug."

However, if a product is represented merely as a means of acquiring a tan, it may be labeled as a "cosmetic" only; relevant provisions of the Act do not require a statement of the active ingredient for this type of representation.

REFERENCES

1. Lowry, F. P.: "Some Present Day Conceptions of Phototherapy," New Engl. J. Med. **211**:171 (1934).
2. Luckiesh, M.: "Applications of Germicidal, Erythemal and Infrared Energy," 1946 (Van Nostrand Co., Inc.).
3. Gerstenberger, H. J. and Hartman, J. I.: "Quartz Lamp Therapy in Human Rickets and Rachitic Spasmophilia; Efficiency of Single Weekly Exposures," J. A. M. A. **92**:367 (1929); Gestenberger, H. J. and Russell, G. R.: "Sunlight Type S-1 Lamp (G.E.) Therapy in Human Rickets and Rachitic Spasmophilia," **ibid. 94**:1049 (1930); Gestenberger, H. J. and Horesh, A. J.: "Cure of Infantile Rickets with Tungsten Filament Radiation," **ibid. 97**:766 (1931).
4. Luckiesh, M., Holladay, L. S. and Taylor, A. H.: "Reaction of Untanned Human Skin to Ultraviolet Radiation," J. Opt. Soc. Amer. **20**:423 (1930).
5. Charcot, C.: "Erytheme produit par l'action de la lumiere electrique," Compt. rend. soc. biol. **10**(2):63 (1858).
6. Widmark, E. J.: "Beitrage zur Ophthalmologie," 1891.
7. Giese, A. C. and Wells, J. M.: "Sunburn Protection, Natural and Artificial," Sci. Monthly, **20**:458 (1946).
8. Keller, P.: "Histologie der Lichtenzundung," Strahlentherapie, **16**:537-824 (1923-24).
9. Blum, H. F.: "Physiological Effects of Sunlight on Man," Physiol. Revs., **25**:483 (1945).
10. Lewis, T. and Zotterman, Y.: "Vascular Reaction of Skin to Injury; Effects of Ultraviolet Light," Heart, **13**:203 (1926).
11. Menkin, V.: "Chemical Basis of Fever," Science, **100**:337 (1944).
12. Menkin, V.: "Chemical Basis of Injury in Inflammation," Arch. Pathol., **36**:269 (1943).
13. Rothman, S., and Rubin, J.: "Sunburn and *para*-Aminobenzoic Acid." J. Invest. Dermatol., **5**:445 (1942).
14. Kurtin, A., Bierman, W. and Yontef, R.: "Inhibition of Erythema Solare in Normal Subjects With Pyribenzamine," J. Invest. Dermatol. **11**:405 (1948).
15. Baer, R. L., Kline, P. R. and Rubin, L.: "Nature of Inhibition of Ultraviolet Erythema by Pyribenzamine," J. Invest. Dermatol. **9**:163 (1947).
16. Friedlaender, A. S., Friendlaender, S. and Vandenbelt, J. M.: "Spectral Absorption Studies of Antihistaminic Drugs," J. Invest. Dermatol., **11**:397 (1948).
17. Bloch, B.; "Chemische Untersuchungen uber das spezifische pigmentbildende Ferment der Haut, die Dopaoxydase," Z. physiol. Chem., 98:226 (1917); "Das Pigment," in Jadassohn's Handbuch d. Haut u. Geschlechtskr., Vol. 1, 1927, p. 434.
18. Frankenburger, W.: "Photochemische Betrachtungen zur Wirkung Ultravioletter Strahlung auf die menschliche Haut," Naturwissenschaften, **21**:116 (1933).
19. Evans, W. C. and Raper, H. S.: "A Comparative Study of the Production of *l-3:4*-Dihydroxyphenylalanine from Tyrosine by Tyrosinase from Various Sources," Biochem. J., **31**:2155 (1937).
20. Fitzpatrick, T. B.: "Human Melanogenesis: The Tyrosinase Reaction in Pigment Cell Neoplasms With Particular Reference to the Malignant Melanoma." A. M. A. Arch. Dermatol. and Syphilol., **65**:379 (1952).
21. Fitzpatrick, T. B., Becker, S. W., Jr., Lerner, A. B. and Montgomery, H: "Tyrosinase in Human Skin: Demonstration of Its Presence and Its Role in Human Melanin Formation," Science, **112**:223 (1950).
22. Yoshida, Y. and Tagashi, Y.: "Studies on Tyrosinase Reaction. I. A New Method of Activating the Tyrosinase Reaction," J. Invest. Dermatol., **24**:573 (1955).
23. Lerner, A. B., Fitzpatrick, T. B., Calkins, E. and Summerson, W. H.: "Mammalian Tyrosinase: The Relationship of Copper to Enzymatic Activity," Federation Proc., **187**:793 (1950).
24. Whitlock, T. A.: "Melanin Pigmentation and Hepatic Disease," A.M.A. Arch. Dermatol. and Syphilol., **64**:23 (1951).
25. Arnow, L. E.: "The Formation of Dopa by the Exposure of Tyrosine Solution to Ultraviolet Radiation," J. Biol. Chem., **120**:151 (1937).
26. Fitzpatrick, T. B., Lerner, A. B., Calkins, E. and Summerson, W. H.: "On the Mechanism of Melanin Formation by the Action of Ultraviolet Radiation," J. Invest. Dermatol., **12**:7 (1949).
27. Lerner, A. B., Shizume, K. and Fitzpatrick, T. B.: "On the Mechanism of Melanin Pigmentation in Endocrine Disorders," J. Invest. Dermatol., **21**:337 (1953).
28. Fitzpatrick, T. B., Lerner, A. B. and Grupper, C.: "La tyrosinase dans les cellules pigmentaires normales et pathologiques de la peau; sa detection par la methode histochimique et biochimique," Bull. soc. franc. dermatol. syphilig., **61**:33 (1954).
29. Grupper, C., Fitzpatrick, T. B., Lerner, A. B. and Kukita, A.: "La detection de la tyrosinase dans les cellules pigmentaires normales et pathologiques de la peau a l'aide de la tyrosine radioactive; methode originale sur lame: ses applications dans le diagnostic du melanome malin," Bull. soc. franc. dermatol. syphilig., **61**:35 (1954).
30. Grupper, C.: "Activite anti-tyrosinasique du serum; note preliminaire sur les possibilities d'un sero-diagnostic du melanome malin," Bull. soc. franc dermatol. syphilig. **61**:145 (1954).
31. Hausser, K. W.: "Einfluss der Wellenlange in der Strahlenbiologie," **28**:25 (1928).
32. Henschke, G.: "Uber den photochemischen Primarvorgang und das Zustandekommen der Wirkungskurve bei der direkten Pigmentierung durch langwelliges Ultraviolett," Strahlentherapie, **71**:174 (1942).
33. Henschke, U. and Schulze, R.: "Untersuchungen zum Problem der Ultraviolett-Dosimetrie," Strahlentherapie, **63**:236 (1938); **64**:14 (1939); **71**:656 (1942).
34. Miescher, G. and Minder, H.: "Untersuchungen uber die durch langwelliges Ultraviolett hervorgerufene Pigmentdunkelung," Strahlentherapie, **66**:6 (1939).
35. Guillaume, A. C.: "Le pigment epidermique; la penetration des rayons U. V. et le mecanisme de protection de l'organisme vis-a-vis de ces radiations," Bull. soc. med. hop. de Paris, **3**:1113 (1926).
36. Miescher, G.: "Die Schutzfunktionen der Haut gegenuber Lichtstrahlen," Strahlentherapie, **39**:601 (1931); **45**:201 (1932).
37. Blum, H. F. and Kirby-Smith, J. S.: "Natural Protection Against Sunburn," Science, **96**:203 (1942).
38. Schall, L. and Alius, H. J.: "Zur Biologie des Ultravioletlichts, die Reaktion der menschlichen Haut auf die Ultravioletbestrahlung" Strahlentherapie, 23:161 (1926); "die Reaktion der menschlichen Haut auf wiederholte Ultravioletbestrahlungen," ibid., **27**:769 (1927).
39. Giese, A. C. and Wells, J. M.: "Sweat-and Water-Resistant Sunburn Preparations," J. Am. Pharm. Assoc. Sci. Ed., **35**:208 (1946).
40. Stambovsky, L.: "Sunburn Preventives," New Jersey J. Pharm., **20**:18 (Aug. 1947); "The Suntan Industry," DCI, **75**:309, 461, 770 (1954).
41. Orelup, J. W.: "Measuring Sunburn Protective Agents," Am. Perf., **52**:49 (May 1936).
42. Blum, H. F., Eicher, M. and Terus, W. S.: "Evaluation of Protective Measures Against Sunburn," Am. J. Physiol., **146**:118 (1946).
43. Rothman, S. and Rubin, J.: "Sunburn and *para*-Aminobenzoic Acid," J. Invest. Dermatol., **6**:445 (1942).
44. Rothman, S. and Henningsen, A. B.: "The Sunburn Protecting Effect of *para*-Aminobenzoic Acid," J. Invest. Dermatol., **9**:307 (1947).
45. Giese, A. C., Christensen, E. and Jeppson, J.: "Absorption Spectra of Some Sun Screens for Sunburn Preparations," J. Am. Pharm. Assoc. Sci. Ed., **39**:30 (1950).
46. Pernich, P. and Gallagher, M.: "Transmission Spectra of Representative Sunscreens," J. Soc. Cosm. Chem., **2**:92 (1950).
47. Kumler, W. D.: "Action of Sunscreen Compounds," Am. Perf., **60**:427 (1952).
48. Christensen, E. and Giese, A. C.: "Photosensitivity of Sunscreens," J. Am. Pharm. Assoc. Sci. Ed., **35**:223 (1950).
49. Kumler, W. D. and Daniels, T. C.:"Sunscreen Compounds," J. Am. Pharm. Assoc. Sci. Ed., **37**:474 (1948).
50. Green, M. W.: "Protective Agents Against Sunburn," Bull. Natl. Formulary Comm., **13**:111 (1945).
51. Hammarlund, E. R.: "An Improved Suntan Cream," J. Am. Pharm. Assoc. Pract. Pharm. Ed., **15**:226 (1954).
52. Beal, P. L.: "Studies in Solar Urticaria," J. Invest. Dermatol. **11**:415 (1948).
53. Meltzer, L. and Baer, R. L.: "Sensitization to Monoglyceryl *para*- aminobenzoate," J. Invest. Dermatol., **12**:31 (1949); **11**:5 (1948).
54. Baer, R. L.: "Examples of Cross-Sensitization in Allergic Eczematous Dermatitis," Arch. Dermatol. and Syphilol., **58**:276 (1948).
55. Satulsky, E. M.: "Photosensitization Induced by Monoglyceryl *para*-Aminobenzoate," A. M. A. Arch. Dermatol. and Syphilol., **62**:711 (1950).
56. Prosser-Thomas, E. W.: "Sunburn Prevention and Treatment." Practitioner, **161**:49 (1948).
57. Bell, C. D. and Mazzone, W. F.: "Prevention of Skin Damage by Sunlight," U. S. Armed Forces Med. J., **3**:1225 (1952).
58. Draize, J. H.: "Appraisal of the Toxicity of Sunscreen Preparations," A. M. A. Arch. Dermatol. and Syphilol., **64**:585 (1951).
59. Lane, E. and Strauss, M. J.: "Toilet Water Dermatitis," J. Am. Med. Assoc., **95**:717 (1930).
60. Andrews, G. C.: "Diseases of the Skin," Saunders, Philadelphia, 1938, p. 815.
61. Klarmann, E. G.: "Perfume and the Skin," Am. Perf., **64**:425 (1955).
62. Goodman, H.: "Copper as Cause of Perfume Dermatitis and as Suntan Stimulant," Arch. Dermatol. and Syphilol., **34**:271 (1936).
63. Sams, W. M.: "Photodynamic Action of Lime Oil (Citrus Aurantifolia)," Arch. Dermatol. and Syphilol., **44**:571 (1941).

64. Lerner, A. B., Denton, C. R. and Fitzpatrick, T. B.: "Clinical and Experimental Studies With 8-Methoxypsoralen in Vitiligo," J. Invest. Dermatol., **20**:299 (1953).
65. Sidi, E. and Bourgeois-Gavardin, J.: "Treatment of Vitiligo with *Ammi majus* Linn," J. Invest. Dermatol., **18**:391 (1952); "Mise au point du traitement du vitiligo par *l'Ammi majus*," Presse med., **61**:436 (1953).
66. Lerner, A. B.: "Potentiation of Suntanning Through Ingestion of 8-Methoxypsoralen," J. Invest. Dermatol., **25**:1 (1955).
67. Klaber, R.: "Phyto-Photo-Dermatitis," Brit. J. Dermatol., **64**:193 (1942).
68. Kuske, H.: "Perkutane Photosensibilisierung durch pflanzliche Wirkstoffe," Dermatologica, **82**:273 (1940).
69. Lamb, J. H., Shelmire, B., Cooper, Z., Morgan, R. J. and Keaty, C.: "Solar Dermatitis," A. M. A. Arch. Dermatol. and Syphilol., **62**:1 (1950).
70. Kesten, B. M. and Slatkin, M.: "Diseases Related to Light Sensitivity," A. M. A. Arch. Dermatol. and Syphilol., **67**:284 (1953).
71. Mitchell, J. S.: "Origin of Erythema Curve and Pharmacological Action of Ultra Violet Radiation," Proc. Roy. Soc., 126, Sci. B. 1938, p. 241.
72. Blum, H. F.: "Sunlight and Cancer of Skin," J. Natl. Cancer Inst. 1940, I, 397.
73. Bergmann W., Stravely, H. E., Strong, L. C. and Smith, G. M.: "Studies on Hypothetical Carcinogenicity of Irradiated Sterols; Effect of Irradiated Cholesterol on Skin of Mice," Amer. J. Cancer, **38**:81 (1940).
74. Elliott, J. A. and Welton, D. G.: "Epithelioma; Report on 1742 Treated Patients," Arch. Dermatol. and Syphilol. **53**:307-332 (1946).
75. C. C. H. Food Drug Cosmetic Law Reporter, 2nd ed., Vol. 1, p. 4104, para. 4021.35; p. 5102, para. 5021.25.

PACKAGING HEALTH AND BEAUTY AIDS

(*Continued from page 463*)

bring into sharper focus the firm's Evenflo trade name.

Closely associated with brand recognition is product promotion. Packaging has made it possible for drug firms to upgrade staples to gifts and to supply retailers with ammunition for attractive seasonal displays. Packaging is the backbone of promotions in the toiletries and cosmetics field, the FPBAA study emphasizes.

In the past two years, sales of Roger & Gallet, New York, have doubled largely on the strength of promotions, says Dorothy Morrison, packaging director. "All promotions hinge on display packages," Miss Morrison says. "The trend toward greater visibility has been a big element in volume—it bolsters impulse sales and develops new users."

One of the firm's latest promotions is a special-price deal made possible by a simple packaging adjustment. A sleeve bearing all information on the promotional offer is slipped over the regular carton holding four fragrances of hand soap. The customer can remove the sleeve after the purchase if the item is bought as a gift. The carton has several film windows to exhibit the contents clearly.

Irregular Shapes

Irregularly shaped products are a nightmare for druggists. Tubes, jars and other containers that taper or have limited flat surfaces severely restrict display opportunities. When packaged in folding cartons, however, stacking problems are quickly overcome—and the products also gain merchandising appeal.

One benefit derived from packaging irregularly shaped items in cartons is the plus volume that can be developed by related-item selling. For example, Anahist Co. combines a tube of children's Super Anahist chest rub with a jar of APC tablets in a carton that features an indented slot in which the tube of chest rub is inserted. The tube is "out the open" but is still in

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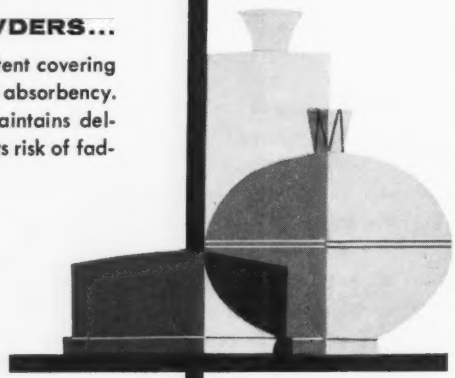

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Reader's Questions . . .

Make-Up Lotion: *We are experimenting along the following lines to make a liquid make-up preparation and would appreciate your comments: to the basic emulsion made from triple pressed stearic acid, lanolin, triethanolamine, glycerin, propylene glycol and water we add talc, kaolin, titanium dioxide, pigments, perfume and preservative. Some of the color rises to the surface and some separates and settles to the bottom. How can we overcome this separation.* MEXICO CITY.

Your problem involves the particle size of the pigments you are using and their degree of wetting. You should grind very thoroughly, preferably in a colloid mill, the white and colored solids with some of the water and the glycerin and propylene glycol, until the mixture is thoroughly homogeneous. A small amount of a non-ionic wetting agent should now be added and the mixture then stirred and ground again. Stand until air has separated and then mix the pigment suspension with the emulsion, preferably passing the finished product through the colloid mill again, avoiding the occlusion of air as much as possible. If the vehicle has proper viscosity and the pigments are very finely ground, settling should be minimized; floating is overcome by sufficient wetting of the pigment and the elimination, as much as possible, of occluded air in the vehicle and on the pigment. The specific gravity of the pigments has an important influence, of course, but can be balanced by the vehicle formulation and processing.

Lemon Juice and Tooth Decay: *Can tooth decay be promoted by the daily drinking of lemonade made from pure lemon juice, water and saccharin, without added sugar.* CHICAGO.

It is our guess that drinking lemonade daily will have surprisingly little effect on the teeth if the oral cavity is in healthy condition. Tooth decay is generally considered to be due to attack of teeth by acids formed by the enzymatic breakdown of sugars. Lemonade containing no added sugar still contains fruit sugar capable of generating acid. More important, of course, the lemonade contains more than enough free acid to attack susceptible teeth. However, the lemon juice remains in the mouth only a short time and the natural buffering secretions in the oral cavity soon neutralize the acid. Acid attack on the teeth, we believe, is more severe when acid is continuously being formed from carbohydrates retained between the teeth.

protected by the sidewalls of the carton.

Sturdier stacking was achieved by a striking carton prepared by Johnson & Johnson for its Tek Denture Brushes. The brushes are packed in pyramid-shaped carton with the apex narrowing at the base making upright display difficult. A sloted display carton holds twelve of the individual packages in four rows of three each, providing a stable, space-saving shelf or counter merchandiser.

Pilferage Control

Open-display selling of drug-items presents pilferage problems for small items. Packaging has helped reduce this hazard—and has added sales appeal at the same time.

A carton shaped like a man, whose cardboard arms encircle a squeeze-bottle of Mr. Stopette spray deodorant, was designed for Helene Curtis Industries mainly to minimize pilferage. And pilferage control was a key objective of the new carton recently introduced by Bristol-Myers Co., New York, for its Ban Roll-On deodorant. Both cartons substantially improve the stacking qualities of these products.

Point-of-Purchase Broadcasting

The squeeze on drug-store display space has sharply curtailed the use of merchandising display aids. But manufacturers still want to put an extra push behind their products with signs, and retailers recognize the value of such tools.

Again packaging provides an economical and practical assist in performing a point-of-purchase advertising task. For example, Gelatin-Plus, manufacturer of a cosmetic for repairing damaged finger nails, designed a shallow carton that becomes an eye-catching display piece simply by folding back the top flap and tucking it vertically into the rear of the package.

Similarly, The Upjohn Co.—in keeping with the pharmaceutical industry's trend to dressing up its products for impulse sales—has created a series of merchandising cartons for its Baciguent and Myciguent antibiotic ointments. The packages have colorful, built-in panels that form eye-catching upright displays carrying information about the products' uses.

Over-all Concept

In the quickened pace of drug selling today, manufacturers must supply packages that provide merchandising "extras" if they are to justify the space their products occupy. Dealers stress increasingly the need for packages that do far more than just carry an item into the store. Today, the package must persuade the customer to carry the item out of the store.

Packaging, thus, becomes an over-all marketing tool responsible for generating impulse sales, extending the value of advertising, facilitating display installations, encouraging customer inspection—while safeguarding contents, developing new uses, cementing brand iden-

SPECIFY STURGE

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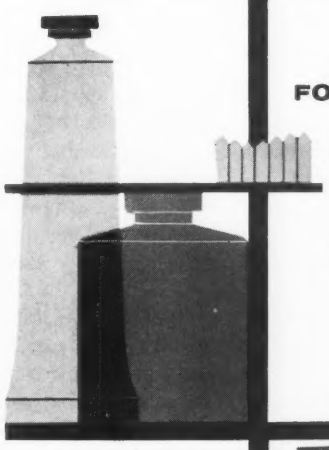

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Year after year, manufacturers of pills and tablets, dentifrices, and cosmetics continue to specify Sturge Precipitated Calcium Carbonate. Sturge PCC, produced by John & E. Sturge of Birmingham, England, has become the standard of excellence. Their experience and careful testing assure PCC of consistent quality—batch after batch.

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tity, and satisfying consumer curiosity.

Druggists will enthusiastically welcome imaginative packaging. A typical druggist spends 40 per cent of his time in Rx service, 10 per cent in administrative detail and only half the time in actual selling. Hence he will be particularly receptive to packages such as multi-cartons, related-items sets or cartons that double as merchandising units.

PRESSURIZED NITROGEN AEROSOLS

(Continued from page 441)

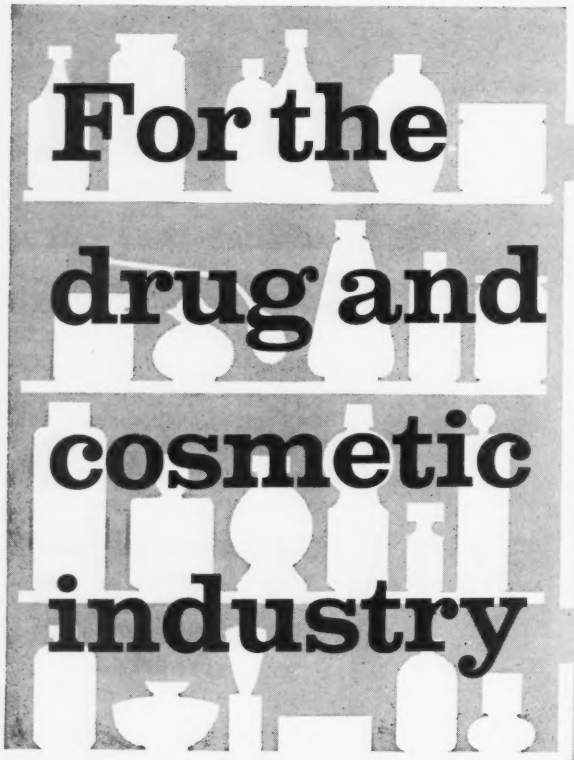
the propellant, the final filled package may be sterilized by autoclaving. At sterilizing temperatures the pressure rise within the can is quite moderate.

Since the product is gently pushed from its container by the compressed gas and not sprayed, the dosage is readily controlled. Again, by variation in the valve openings and the diameter of the dip tube, a product like pediatric vitamins or cosmetic hormone oils may be dispensed in drops; pharmaceutical liquid dosage forms for oral use can be directly filled with one hand into a teaspoon; tooth paste can be laid directly on the brush, without concern for removal or replacement of caps and with complete protection and maintenance of sterility for the preparation in the container.

The cost of the nitrogen pressure package is comparable to that of a squeeze bottle and no greater than that of a large collapsible tube and its necessary carton. No small advantage over collapsible tubes is the obvious fact that the lithography on the can remains in full view throughout the use of the package, unaffected by position and distortion of shape.

A major application of this new package is in food and beverage dispensing as exemplified by liquid and paste concentrates, especially where the solubility and taste of carbon dioxide are undesirable. All cosmetics not improved by spray or foam application can add a merchandising plus through this additional application convenience. The form of the preparation, whether solution, suspension, emulsion, cream or paste does not affect the use of the compressed nitrogen package, as long as the product can be made to flow, and even if it is not pourable. Baby oils and lotions, hand lotions, hair dressings can be packaged in this manner without modification. Dentifrices may require slight reduction in their viscosity. Shampoos packaged with nitrogen would not foam on the hair until rubbed in, apparently a consumer preference that has retarded the acceptance of standard aerosol shampoo packs.

The whole field of non-tablet, non-solid pharmaceutical preparations, except parenterals, is open to this new package. Applications to the skin will not involve excessive cooling of the skin surface; oral dosage forms need not be concerned with possible toxicity of the propellant; sensitive compounds and mixtures can be protected from the action of air and micro-organisms. This may well represent the awaited breakthrough for the pressurized package as applied to ethical as well as proprietary pharmaceutical products.



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Trade Literature

CSMA Aerosol Guide

The Chemical Specialties Manufacturers Association, 50 East 41 Street, New York 17, is offering at $8 per copy, a 96-page guide book for manufacturers and marketers of aerosol products. In loose leaf binder form to facilitate additions and corrections, the guide contains accepted testing methods, material on standard fills and safety precautions, pre-marketing checklists, mailing and shipping regulations, and a glossary of terms.

Peroxide for Epoxidation

An up-to-date review and bibliography of the application of hydrogen peroxide for epoxidation and hydroxylation is available from the Advertising & Sales Promotion Section, Solvay Process Division, 61 Broadway, New York 6.

Thioglycolic Acid

Properties, Reactions, and Uses of Thioglycolic Acid, a 20-page catalog, never before published under one cover, is available from Evans Chemetics, Inc., 250 East 43 Street, New York.

Emcol P10-59

Emulsol Chemical Corporation, 75 East Wacker Drive, Chicago 1, has issued Technical Bulletin No. 50 which gives full details on the various emulsifying and detergent applications of Emcol P10-59, a versatile oils soluble alkyl aryl sulfonate.

Dry Processing Equipment

Sturtevant Mill Company, Boston 22, has published an eight-page Dry Processing Equipment Catalog in which air separators and their use in closed-circuit grinding, micronizer fluid energy mills grinding, and rotary batch blenders are described in detail.

Spectrochemical Analysis

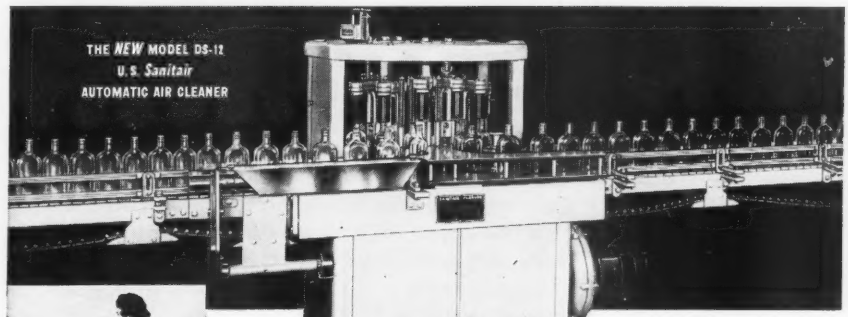
Spectrochemical Analysis is the title of a 24-page brochure describing a variety of prism and grating spectographs, and related accessories, produced by Hilger & Watts, Ltd. This is the third in a series and is being distributed by the U. S. representative, Jarrell-Ash Co., 26 Farwell St., Newtonville 60, Mass.

Silicones in Medicine

Silicones in Medicine and Surgery, by R. R. McGregor, assistant director of research at the Dow Corning Research Center, is a 44-page booklet available from Dow-Corning Corporation, Midland, Michigan. Silicone applications are described for dermatology and cosmetics; instrument sterilization fluid; dental application; coating of vials, coating of capsules and pills; cattle bloat; blood handling and internal surgery; gastroscopy; carriers for injectibles; pulmonary edema; peptic ulcers, as well as others. Bibliography is included.

Collected Schimmel Briefs

Schimmel & Co., 601 West 26 Street, New York 1, is offering the second volume of Collected Schimmel Briefs covering the years 1951 through 1956 at $10.00 a copy. The spiral bound volume, with a detailed subject index, comprises a valuable reference work for those developing and producing cosmetics. Included is useful information on many newer raw materials, such as special detergents and emulsifiers, astringent salts and antiseptics; manufacture of specific products, such as cologne sticks and aerosol hair lacquers; numerous patents in cosmetic technocology.



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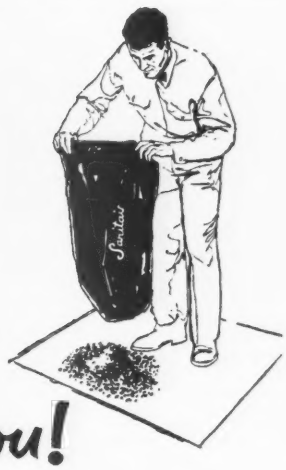

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(Continued from page 447)

The wide deviation of Carbopol 934 mucilages from Newtonian flow is apparent when it is considered that a Newtonian system would give a straight line curve originating at the origin. The curves obtained for mucilages of Carbopol 934 indicate that the material is classified as pseudoplastic or viscosity decreased under increased shear. It has a very high yield value but the thixotropy is negligible as seen by the fact that the up curve (where the shear rate increases from 100 rpm to 200 rpm) nearly coincides with the down curve. The presence of the high yield value gives the polymer the ability to suspend solids. Even such a heavy material as sand can be suspended by an apparently low viscosity gel as shown in Figure 5. Considerable work has also been done in the field of emulsion stabilizing. Here the high yield value plays two important roles. It effectively inhibits the Brownian motion of the particles and therefore prevents the different phase layers from forming by counteracting the effects of gravity. In this work the Carbopol 934 acts only as a stabilizer and has no effect on the formation of the emulsion. Some very limited work has been done which involves the neutralization with a lyophilic base to impart surfactant properties to the Carbopol 934. The illustration shown in Figure 6 involves a mixed salt dodecylamine and sodium hydroxide. It is believed that a portion of the long chain aliphatic dodecyl groups orient to the oil side of the oil water interface while the sodium carboxyl groups orient to the water side. This causes reduced interfacial tension and the resultant emulsion formation. We are investigating this type of system further.

In some of our early screening work in cosmetic formulations it was obvious that the polymer was acting as a humectant as well as performing the function of thickening. The humectant properties of Carbopol 934 were evaluated in comparison with commonly used humectants such as glycerin. This property of the polymer was studied by exposing Carbopol 934 in a desiccator containing saturated chemical solutions to produce equilibrium humidity conditions. The polymer was compared with two common humectants, ethylene glycol and glycerin and the results shown in Figure 7. It should be noted that Carbopol 934 is not as active on a pound basis as ethylene glycol or glycerin. However, in controlling the moisture content of a product the total volume of water contained is not always as important as the retention of constant amounts when the product is exposed to alternative cycles of low and high humidity conditions. Between 40 per cent and 80 per cent humidity the difference in equilibrium water content is much smaller for Carbopol 934 than for glycerin.

For a thickening agent to perform well in cosmetics it must have good stability. It is well known that most materials employed as thickeners are subject to degradation or loss of viscosity on aging. This breakdown may be due to bacterial or fungal attack or simple

chemical hydrolysis. In Figure 8, 1 per cent Carbopol 934 was compared with 2½ per cent sodium alginate, 2 per cent carboxymethyl cellulose and 4 per cent gum tragacanth. These samples had all been inoculated with a mixture of 9 different kinds of mold and aged at room temperature. Over a period of 14 weeks these gums completely lost their viscosity. Over the same period of time the Carbopol 934 decreased in viscosity from 30,000 to 20,000 cps. We believe that Carbopol 934 is not subject to hydrolysis or polymeric degradation due to bacterial or fungal attack. Certain molds have been induced to grow in Carbopol mucilages; however, there is only slight loss in viscosity. It is assumed that the mold is growing on trace impurities which can be found in any water. The viscosity of Carbopol 934 mucilages is also quite stable to temperature variations. This is shown graphically in Figure 9 as Carbopol 934 at 1 per cent is compared with 2½ per cent sodium aliginate, 2 per cent carboxymethyl cellulose and 3 per cent gum tragacanth. The reason for this viscosity stability with temperature with Carbopol 934 is probably related to the primary cause of thickening in Carbopol 934, that of electrostatic repulsion of negatively charged groups along the polymer chain.

Glycerin & Hydroxylated Solvents

Carbopol 934 in addition to being a thickener for water is an extremely efficient thickener for glycerin alone and also other hydroxylated solvents such as ethylene glycol. It is also a thickener for mixtures of these hydroxylated solvents and water. The mechanisms and neutralization characteristics are very similar to water systems but the viscosities obtained are much higher with a given amount of the synthetic gum. A 1 per cent solution of Carbopol 934 in glycerin has a pH of approximately 3.5 and is only slightly more viscous than glycerin alone. The acid solution can be neutralized with a suitable base such as sodium hydroxide, ammonium hydroxide or triethanolamine and a similar thickening phenomena occurs such as with Carbopol 934 in water. Relationship between pH and a viscosity of 1 per cent solution of Carbopol 934 in glycerin can be seen in Figure 10. A comparison between the curves for glycerin and water both thickened with the polymer shows a similarity in the general viscosity stability over a wide pH range. It is interesting to note that for a given concentration of Carbopol 934 the viscosity in glycerin is much higher than in water. In the case of 1 per cent Carbopol 934 the viscosity is 3 times as high in glycerin as in water. This can be further demonstrated by Figure 11 which shows viscosities for various concentrations of Carbopol 934 neutralized with sodium hydroxide to a pH of 7.3 in glycerin and water. The entire concentration range showing the amount of Carbopol 934 required in glycerin to obtain a given viscosity is no more than one-half of that required in water. Glycerin and water blends thickened with Carbopol 934 have intermediate viscosities between the thickening of pure glycerin and

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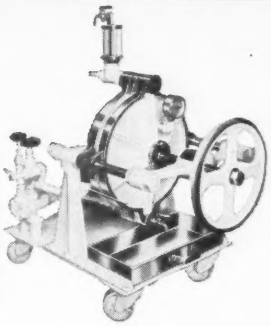

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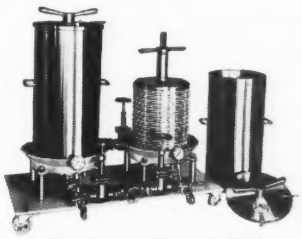

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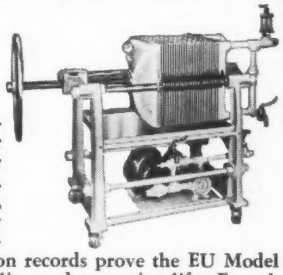

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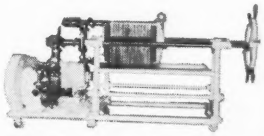

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pure water alone. This is not a linear function but as shown in Figure 12 a greater decrease in viscosity comes with the addition of the first 20 per cent water than from going from 20 per cent to 100 per cent water. The rheology of Carbopol 934 in glycerin shows a general similarity to that of Carbopol 934 in water. That is, it is pseudoplastic with a high yield value. The chief differences between the two systems is that the glycerin thickened with Carbopol is characterized by a much lower ratio of yield value to viscosity than Carbopol in water. Also the glycerin system is more thixotropic. The appearance of thickened glycerin is very smooth, glossy and crystal clear and it has a high degree of lubricity. If an object is dipped into a non-pourable glycerin it will pull up a string of the solution with it, whereas, water thickened with Carbopol 934 is very short. When the effect of temperature on the viscosity of Carbopol 934 thickened glycerin was investigated it was thought that it would be quite small as it is in Carbopol 934 in water. Figure 13, however, shows that the effect of temperature on viscosity of a 1 per cent solution of Carbopol 934 in glycerin is much more severe than it is in the case of water mucilages. It can be seen that the curve for thickened glycerin, although much higher in viscosity, parallels the curve for pure glycerin versus temperature and this therefore may be a general property of glycerin. We would advise anyone who is specifically interested in thickening glycerin to refer to the article by Cohen.[1]

Summary

To sum up briefly, Carbopol 934 is a high molecular weight water-soluble acid polymer. When neutralized to form a salt it will impart high viscosity through an electrostatic repulsion of ionized carboxyl groups on the polymer chain. An excess of metal ions adversely affects this high viscosity and should be avoided whenever possible. The high viscosity which is imparted by the polymer is pseudoplastic, which means that it has low viscosity at high shear rates and high viscosity at low shear rates. These gels also have high yield which gives them the ability to suspend solids and stabilize emulsions with apparently low viscosity which would make them useful for lotions. Work is presently being done to have Carbopol 934 act as a combined emulsifier and emulsion stabilizer by making a salt of Carbopol 934 with an oil soluble amine.

A secondary property to consider when formulating with Carbopol 934 is its ability to act as a humectant. It also is resistant to degradation by bacterial action or chemical hydrolysis.

Other hydroxylated solvents such as ethylene glycol and glycerin can be thickened to extremely high viscosities. Gels of glycerin are clear, and are stiffer with more stringiness than Carbopol 934 thickened water.

These properties can be used for problems related to formulation of cosmetic gels, stabilization of emulsions and suspension of solids.

BIBLIOGRAPHY

1. Cohen, Louis, "New Thickener for Glycerine," SOAP and CHEMICAL SPECIALTIES, November and December, 1956.

(Continued from page 453)

ually 25 milligrams, and concluded that when a subject is in good health there is no reaction at all in 60 per cent of the cases, and in 40 per cent a state of euphoria is to be noted, a greater resistance to fatigue, sometimes a light insomnia. The results obtained do not seem to depend on the amount given since they appear when the dosage has been very small. It is not habit forming and leaves no feeling of depression.

Dr. Decourt pointed out that in nervous cases Royal Jelly generally increases appetite rapidly. In this connection, Dr. Chauvin comments that it is known that changes in the release of glycogen from the liver are at the base of most nervous crises, and that a moderate stimulation of the release of this stored energy food often is accompanied by a feeling of euphoria.

Dr. Chauvin then reports as follows, on the works of Drs. Sarrouy, Raffi, Leutenèger and Alger:[11]

These men used Royal Jelly in an entirely different manner, mostly for serious cases of malnutrition in infants. Royal Jelly seems to have a most favorable action on weight, as its increase is quite decided. However, the authors find the reaction on the general health even more interesting. Children lose their drawn and old faces, their eyes brighten and their cheeks regain their color. They come out of their general state of lethargy. In recent cases, not more than 7 to 8 lyophilized injections have been necessary to produce notable results. It is to be noted here that since the patients were infants any appeal to auto-suggestion was impossible. Dr. Chauvin does not report the size of the injections.

Lyophilizing is a process of drying a fluid product under vacuum at low temperature. To bring it back to injectable form it is reconstituted with distilled water.

Dr. Chauvin also reports in this paper on experiments carried on by a colleague, Dr. Betourne of the Hospital Necker in Paris. This work has not as yet been published, so he only generalizes on the results saying that the works "tend to prove that Royal Jelly given in doses of a few milligrams, has most salutary results in cases of debility and senility. Improvement becomes noticeable after only a few injections, seems lasting, and appears to occur in a very high percentage of tests made.

Dr. Ardry experimented[12] with Royal Jelly at the "Etablissement Central de Transfusion de l'Armee," (Clamart-Seine). He studied and tested the physical and chemical aspects of Royal Jelly and found they conformed with what other scientists had found and published.

His studies and experiments with Royal Jelly led him to make this remarkable statement "It has never been possible to duplicate the dynamic reaction of Royal Jelly injections in human beings with injections of the same vitamins as are contained in Royal Jelly, at doses sometimes 1000 times as concentrated." He concluded, therefore, that the action of Royal Jelly on the body was due to its stimulation of the suprarenal

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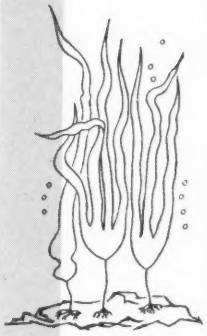

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glands and the consequent general reaction on body metabolism.

He made hematological studies, and introduced this subject in his paper by making two observations:

1. Royal Jelly has a certain action on the suprarenals and we can explain this mechanism only according to Sely's syndrome.

2. The sometimes euphonic improvement which could be observed in older persons, the improvement observed in subjects who had been treated unsuccessfully with B12, led us (Ardry) to consider that there is a regeneration of certain elements in the blood whose final expression is a better oxygenation of the tissues, as well as improved defense against infection.

Contrary to the results found by Destrem, and by Prosperi, Ragazzini and Francalancia with human beings, Ardry found that whereas 15 and 30 milligrams were successful doses when administered intravenously or intraperitoneally, that it took doses about 4 times larger to be equally effective when administered orally.

He concludes that the therapeutic action of Royal Jelly must be related to an activity arising in the lymphoid tissues of the suprarenals, following an initial phase of over-stimulation of the latter.

Since the suprarenal glands are of such enormously vital importance to life processes, and since Royal Jelly activates them, the implications of the importance of Royal Jelly becomes clear.

At this stage of the investigations on Royal Jelly Ardry's work adds to our knowledge of Royal Jelly the following:

1. It has a precise physiological activity proved by repeated examination of the blood of humans and animals that received Royal Jelly.

2. Whereas Royal Jelly is slightly insoluble and unclear in water, it can be made completely soluble and clear by bringing its pH to the alkaline side.

3. Royal Jelly for pharmaceutical use must be purified to high standards.

4. Royal Jelly acts according to a hormonal action biological rather than chemical, exciting the glandular tissue.

5. It produces no antibodies.

Among the many adverse criticisms of Royal Jelly there was one which condemned beekeeper and Royal Jelly alike for the unsubstantiated claims that have been made, although beekeepers had little if anything to do with those developments. So, it seems appropriate at this point to state that the high standing of the men of science who have furnished the world with this proof of the effectiveness of Royal Jelly may not be questioned. Neither may be questioned the eminence of the institutions where this fine research work was done, nor the reputation of the journals wherein these results have been published.

It may be conceded at once that this is only the beginning. There is much much more to be known. Nevertheless, results of the work done in France are

sufficiently positive that certain conclusions may already be drawn:

1. Royal Jelly has been demonstrated to be of great aid in the field of gerontology (the study of old age).

2. Royal Jelly has been demonstrated to be a therapeutic agent in cases of neuro-psychoses.

3. Royal Jelly has been demonstrated to be a strongly positive aid in the treatment of serious cases of malnutrition in infants.

4. Royal Jelly doses in injectable form are small, averaging about 25 mgs. Equivalent oral doses are about 100 mgs., but obviously more knowledge is needed on this point.

5. Royal Jelly has a tendency to raise low blood pressure but not to increase high blood pressure.

6. A feeling of euphoria commonly attends treatment with Royal Jelly.

7. The active ingredient in Royal Jelly is hormonal in nature, having a biological or catalytic action on the glandular tissue, notably the suprarenals.

REFERENCES

1. 1955—Chauvin R. La gelee royale. I. Recolte et Conservation. Proprietes physiques. L'Apiculteur (Sect. Scientif.) fev. 1955.
2. 1956—Chauvin R. II. Composition biochimique de la gelee royale. Ibid., nov. 1956.
3. 1956—Chauvin R., Louveaux J. Etude macroscopique et microscopique de la gelee royale. Ibid., juillet-aout 1956.
4. 1956—Chauvin R., Hebert S. Effet des injections de gelee royale chez les mammiferes. C. R. Soc. Biol. CL, 332.
5. 1956—Chauvin R., Hebert S. Action de la gelee royale d'abeilles injectee aux Mammiferes. Etude histologique. Biologica latina. H. IX, 441-52.
6. 1956—Chauvin R., Sur un principe de la gelee royale d'absilles actif sur la glyce-mie des mammiferes. C. R. Acad. Sc. 243, 1920-21.
7. 1956—Goillot C. Recherches de caracteristiques physiques de la gelee royale totale. L'Apiculteur, Sect. Scientif., fevr.-mars 1956.
8. 1957—Chauvin R., Action sur les Mammiferes et sur l'Homme de la gelee royale. L'Apiculteur, Sect. Scientifi., 101 Annee No. 4, Avril 1957.
9. 1956—Destrem H., Experimentation de la gelee royale d'abeilles en pratique geriatrique. Rev. Fr. Gerontol., 3, bim. 1956.
10. 1956—Decourt P., La gelee royale d'Apis mellifera et son activite chez les Vertebres superieurs. Rev. Pathol. Gener. Physiol. Clin., 56, 1641-64.
11. 1956—Sarrouy C., Raffi A., Leuteneger M. Essai de traitement de huit cas d'hypotrophie grave du nourrisson par les extraits lyophilises de gelee royale. Pediatrie, no 1, 1956.
12. 1956—Ardry R. Contribution a l'etude de la gelee royale. I. II. III. Ann. Pharmac. Fr., XIV, 97.

PHARMACEUTICAL FERMENTATIONS

(Continued from page 443)

of 1957. This company's plant in Santiago, Chile, is virtually complete and soon will be in production. A new plant will be started soon near Buenos Aires, Argentina, and another is planned for Mexico.

For the next several years, the Schering Corp. plans to spend annually $2,000,000 for expansion. Along with other overseas expansion, plants in Canada and Mexico are under construction, and an export subsidiary has been organized in Panama. E. R. Squibb & Sons is building a factory near Istanbul, Turkey, for making streptomycin, penicillin, and other pharmaceuticals.

Takamine Laboratory, Inc., Clifton, N. J., has been merged with Miles Laboratories Inc., Elkhart, Ind., and will be operated as a separate division. Takamine produces enzymes for pharmaceutical and industrial uses, while Miles makes drugs, fine chemicals, and citric acid by deep fermentation.

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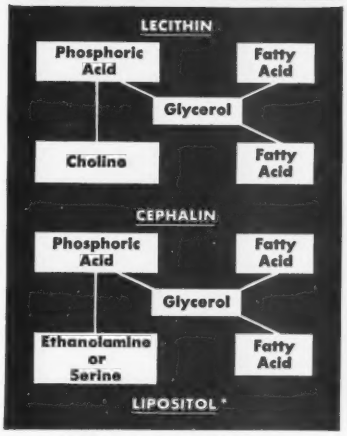

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equipment for manufacturing streptomycin by the state-owned Hindustan Antibiotics, Ltd. Offers by Merck and Pfizer to aid in building pharmaceutical factories in India were rejected as unsatisfactory. The Soviet Union has apparently made a more favorable offer.

A group of chemical manufacturers in Spain have been authorized to install a new antibiotics factory, expected to begin operations in 1957, which initially will manufacture 7000 kg. of crystalline penicillin and later, other antibiotics. Initial capital will be 50,000,000 pesetas and a Danish firm will provide technical collaboration. Poland will purchase three streptomycin plants from the Soviet Union. Two will be in Tarchomin (near Warsaw), and the third, near Krakow.

A merger between Wallerstein Laboratories and Baxter Laboratories, Inc., was recently announced. Baxter produces solutions for intravenous feeding, and equipment for blood collection, and trusfusion; Wallerstein makes enzymes for the brewing, textile, dry cleaning, tanning, baking, and pharmaceutical industries.

Production of antibiotics continued at a fairly good rate in 1956. During 1955 there was the first noticeable reduction for penicillin and its salts, but sales kept pace with the previous year. Other reductions in dihydrostreptomycin, the broad spectrum antibiotics, and riboflavin production are noticeable.

Organic Acids

Citric acid fermentation still attracts considerable interest—when papers on this subject are given at scientific meetings, attendance is high. New uses such as in sequestering agents for secondary oil recovery, could open a vast new potential market for citric acid.

Fermentation production of α-ketoglutaric acid continues to receive attention. One of the best publications, by Asai and others, deals with accumulation of α-ketoglutaric acid from glucose, among a variety of aerobic and faculative anaerobic bacteria. The mechanism of α-ketoglutaric formation is also discussed. They describe a new bacterium which produced up to 56 per cent of the acid based on the total glucose supplied, in a 10 per cent glucose concentration in 72 hours. Accumulation of α-ketoglutarate in an *Aspergillus terreus* culture solution, described by Ramachandran and Rao, occurred when sucrose was used as a carbon source at a pH of 2.9.

A new fermentation industry—calcium gluconate—was described by Elias. Lee and Chang also reported on oxidation of glucose to gluconic acid; yields of over 90 per cent from 15 per cent glucose solutions. A patent on microbiological oxidation of idonic acid to 2-keto-1-gluconic acid by use of *Micrococcus aurantiacus* was issued to Shoemaker (*12C*).

Vitamins

Studies have continued on biosynthesis of riboflavin by various microorganisms and by using labeled carbon compounds.

Interest in vitamin B_{12}, particularly in structure and synthesis, has continued. The Milwaukee Sewerage Commission and the Vern E. Alden Co. have announced that a plant is under construction in Milwaukee to produce vitamin B_{12} from sewage wastes. It will coordinate vitamin processing with milorganite (fertilizer) production. Though only part of the total milorganite output is earmarked for vitamin use, potential capacity of the extraction plant is in excess of 200 pounds per year of pure vitamin B_{12} activity. The entire output will go to Armour Laboratories for use in poultry and livestock feeds.

Dextran

Interest in dextran has decreased and domestically, commercial production is limited to small military contracts. New uses other than as a plasma extender are being exploited. A British patent covers its use, either as such or partly depolymerized, along with an organic detergent for a dentifrice. Dextran has also been used to make a non-fattening ice cream cone. A patent covers artificial sponges prepared from dextran. The sponge is absorbable, readily assimilable by living animal bodies, therefore, useful in medicine and surgery. Another patent relates to use of destran as a smooth body powder.

Gibberellin

A new commercial fermentation announced during the past year was gibberellin, a product originally discovered by the Japanese in 1898. The filtrate material produced by the fungus, *Gibberella fujikuroi*, caused an elongation of rice shoots, which was known as bakanae disease. The potent nature of the material was stressed by the Japanese workers, but its significant importance was not recognized until recently.

Several compounds are formed in the filtrates—gibberellin A (A_1, A_2, and A_3 (X, or gibberellic acid). Also, a small amount of fusarinic acid which has no growth activity may be formed. All three types of gibberellin apparently act in the same way to stimulate certain plants to grow two to three times their normal height and may also induce earlier flowering and seeding. Preliminary results have been frequently encouraging, but many difficult agricultural problems requiring several years of work must still be resolved.

Gibberellin is being produced now by Imperial Chemical Industries, Eli Lilly, Merck, Pfizer, S. B. Penick, Abbott, and American Cyanamid. Originally, it was priced at $40 per gram by Imperial Chemical Industries but Merck and Pfizer have recently priced large quantities at $10 per gram.

Lysine

The first commercial production of L-lysine by fermentation was announced by Pfizer in November of 1956. Chief advantages claimed are its high yield, high purity, and low cost.

U. S. Patent 2,771,396 issued to L. E. Casida, Jr., covers a process for making lysine. The first step in-

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volves a mutant *E. coli* strain that ferments a medium consisting of glycerol, corn steep liquor, salts, and water, producing a good yield of diaminopimelic acid. The mutant *E. coli* is usable to convert diaminopimelic acid to lysine, but requires for growth a small amount of lysine which it obtains from corn steep liquor.

The second step involves culturing *Aerobacter aerogenes* or *E. coli* in another medium not needing lysine for growth. This produces an enzyme, diaminopimelic acid decarboxylase. Toluene is added to rupture the cells and the broths are mixed; the enzyme liberated converts all the diaminopimelic acid to L-lysine which is than recovered by ion exchange.

The National Research Council of Canada and the Northern Utilization Research Laboratories are working on processes for making lysine or lysine-rich material, for bread fortification and animal feeds. However, their processes are not yet on a commercial scale.

Steroids

Importance of microbiological transformation of steroids has continued and numerous publications have appeared. Reviews include those by Eppstein and colleagues, Enthoven, Peterson, and Shull. At the ACS meeting in September, a day-long symposium was also devoted to this subject.

Most transformations of steroids reported during the past year, rather than being new, were extensions of previously reported procedures. Perhaps the most novel transformation is that reported by Camerino and Vercellone where 16α, 17α-epoxidoprogesterone is subjected to a reductive rearrangement by fermenting yeast to yield 17β-methyl-18-nor-$\Delta^{4,13}$-17α-pregnadiene-16α,20α-diol-3-one. Nishikawa and others extended the research reported by Vischer and Wettstein on oxidation of progesterone by *Fusarium solani*. They found that the ratio of various products, ranging from 1-dehydroprogesterone to 1-dehydrotestolactone, depends on the amount of progesterone and the presence or absence of acetone in the fermentation. A similar study on intermediates in the oxidation of progesterone to testolactone by *Aspergillus oryzae* was reported by Capek and others.

An important contribution in microbiological steroid hydroxylation was the demonstration by Hayano and others that oxygen used in this reaction is derived from molecular oxygen rather than from water. In this respect, microorganisms resemble adrenal tissue. Lynn and Brown have discussed some possible mechanisms of steroid oxidation on the basis of these results.

Vischer and others demonstrated specificity of microbial enzymes involved in steroid transformations. Only the dextro form of a racemic intermediate in the aldosterone synthesis was converted into the 21-hydroxy analog by *Ophiobolus*. The levo antipode remained unchanged. Similarly, microbiological dehydrogenation and hydrogenation with other organisms were shown to proceed only with the dextro-enantiomorph.

An article by Karow and Petsiavas on the effect of physical variables on microbiological transformation of steroids was the only publication dealing with larger scale steroid fermentations.

Antibiotics

A general reference discusses new antibiotics and recent developments in older antibiotics, and Krasilnikov has summarized proceedings of a conference on antibiotics in China. Articles of general interest describe the screening of soils for antibiotics in Korea and in India.

Penicillin. A comprehensive review on the metabolism of *Penicillia* in relation to penicillin biosynthesis has been prepared by Arnstein and Grant. In other publications of general interest, Park and Strominger have outlined a biochemical basis for the mechanism of action of penicillin and for its selective toxicity, and Cooper has discussed the site of action of radiopenicillin. The total synthesis of penicillin V by Sheehan and Henery-Logan was mentioned earlier.

Studies on improving media continued and include additional data on effect of oils, various protein sources as replacements for corn steep liquor, substitution of glucose, sucrose, and molasses for lactose, and addition of cytidene and cysteine to the medium.

Previous publications on biosynthesis of penicillin established that cysteine was a direct precursor and that the carbon skeleton of valine was incorporated into the molecule. These findings have been corroborated and extended by Arnstein and Crawhall, Demain, Halliday and Arnstein, and Stevens and others.

Streptomycin. Increased streptomycin production in a near-synthetic medium by adding a number of 5,5-dialkylbarbituric acids has been demonstrated by Ferguson and others. Wang and others, using labeled glucose, found that young *Streptomyces griseus* cells used practically all of the carbohydrate for respiratory and biosynthetic functions, but older cells converted as much as 50 per cent of the glucose into fermentation products.

Structures of two naturally occurring antagonists of dihydrostreptomycin were shown by Cornforth and James to be 2-*n*-heptyl-4-hydroxyquinoline-*N*-oxide and 2-*n*-nonyl-4-hydroxyquinoline-*N*-oxide. These compounds produced by *Pseudomonas pyocyanea* were inhibitors of both heart and bacterial cytochrome preparations.

Tetracyclines. A monograph by Musselman reviews history, physical and chemical properties, antimicrobial activity, pharmacology, and therapeutic uses of oxytetracycline.

Boretti and Raggi have found that chlortetracycline inhibits oxidation of carbohydrates by *Streptomyces aureofaciens*. This could be demonstrated with both antibiotic- and nonantibiotic-producing mycelium and could be reversed by calcium and magnesium ions. From a study of chlortetracycline production by *S. aureofaciens* where materials such as labeled carbo-

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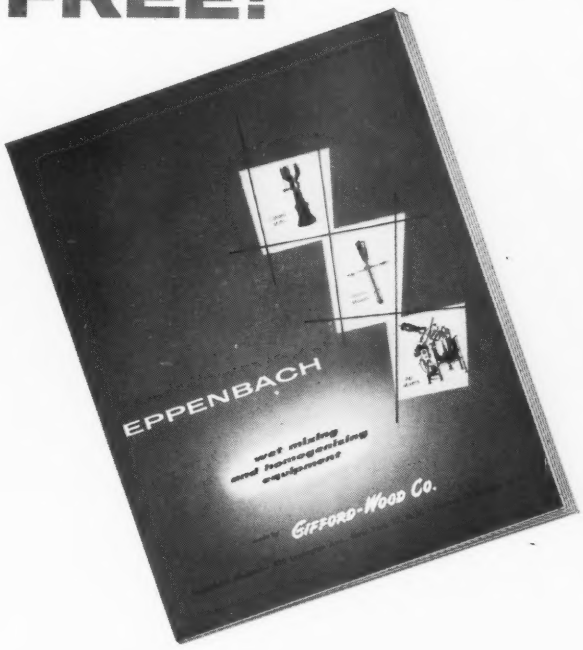

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hydrates, and amino acids were employed, Miller and others concluded that the organism can construct the entire molecule from simple compounds. Some Chinese investigators have found that the inoculum medium employed in *S. aureofacines* fermentations markedly affects subsequent chlortetracycline production. High antibiotic-producing inoculum did not contain more total growth but the mycelium exhibited an altered metabolic pattern.

An interesting paper on halide metabolism of *S. aureofaciens* mutants has been published by Doerschuk and others. They have described biosynthesis of 7-chloro-, 7-chloro^{36}-, and 7-bromtetracycline and tetracycline by proper selection of strain and fermentation conditions. Repression of halogenation by halide denial or by the use of inhibitors such as bromide or thiocyanate led to the production of tetracycline. Cultures described possessed individual "total tetracyclines potentials" and halide variation changed identity of product. Both bromtetracycline and chlortetracycline-labeled with chlorine-36 were produced by proper manipulation of one of the mutants.

Chloramphenicol. Addition to *p*-nitrophenylserinol, a hydrolysis product of chloramphenicol, to fermentations of *Streptomyces venezualae* had previously been shown to stimulate antibiotic production. These results suggested that *p*-nitrophenylserinol acts as a precursor. Now, however, Gottlieb and colleagues have found that *N*-acetyl-*p*-nitrophenylserinol, itself an antibiotic, is the main product. Experiemnts with *p*-nitrophenylserinol-labeled with carbon-14 confirmed these results because no tagged chloramphenicol could be detected.

Erythromycin. A noteworthy development in antibiotics research in 1956 was elucidation of the structure of erythromycin. It consists essentially of two sugars—desosamine and cladinose—attached to erythronolide, a macrocyclic lactone (11 carbon atoms).

According to several patents, fermentation yields of erythromycin are improved by adding certain short chain alcohols, aldehydes, and acids—specifically, methanol, ethanol, 1-propanol, 1-propanal, and water-soluble salts and amide derivatives of propionic acid.

Novobiocin. Some confusion has arisen in regard to the nomenclature of novobiocin which is the generic name for Upjohn's Albamycin (streptonivicin), Merck's Cathocin (cathomycin), and Pfizer's Cardelmycin (crystallinic acid). The names in parentheses are older generic terms which now have been discarded. Also novobiocin should not be confused with the Soviet antibiotic, albomycin, as it was in *Lancet*. Recently, albomycin was shown to be similar or identical with grisein.

Structure of novobiocin has been worked out by two independent groups of investigators. In the molecule, a sugar, noviose, is attached to a coumarin moiety which in turn is attached to a *p*-hydroxybenzoyl moiety by an amide linkage. Fermentation studies

with *Streptomyces niveus*, an organism producing novobiocin, have been reported by Smith.

Previous reviews by Beesch and Shull appeared in Ind. Eng. Chem. 47:1857,1955 and 48:1585,1956.

Microorganisms. Strain improvement research is an essential part of any production program and therefore, genetic studies to increase fermentation yields has continued to be emphasized. Sermonti studied complementary genes which affect penicillin yields and the two loci which affect production of pencillin by *P. chrysogenum* have been identified. Capacity to produce penicillin is suppressed by eight mutant alleles at one end of the loci and a marked decrease of yield accompanied by an effect on conidium color is produced by one mutant allele at the other locus. The two loci are different chromosomes. The wild-type alleles of the two genes restore penicillin production in the heterokaryotic and heterozygous conditions but not when they are carried in different mycelia in mixed culture. Haploid and diploid strains have been identified among the segregants from a heterozygous diploid.

Obtaining hybrids between *Saccharomyces cerevisiae* and *Schizosaccharomyces pombe* through copulation of cells was described by Kossikov, and a simple laboratory procedure for hybridization of *Saccharomyces lactis* and *Zygosaccharomyces ashbyi* was described by Wickerham and Burton.

Heterokaryosis in *Streptomyces* was investigated by Bradley and Lederberg. They found that heterokaryosis could be established by analyzing prototropic colonies formed from intimately associated combinations of complementary auxotrophs on minimal agar. Of 140 fragments isolated from various prototrophic mycelia, 91 were heterokaryotic (yielded from spores of both types); 49 were homokaryotic (obtained spores of only one or the other parental types).

Generic recombination in *Streptomyces* was studied by Szybalski and Braendle. Ultraviolet radiation and replica-plating were used to isolate nutritional mutants of various antibiotic-producing strains.

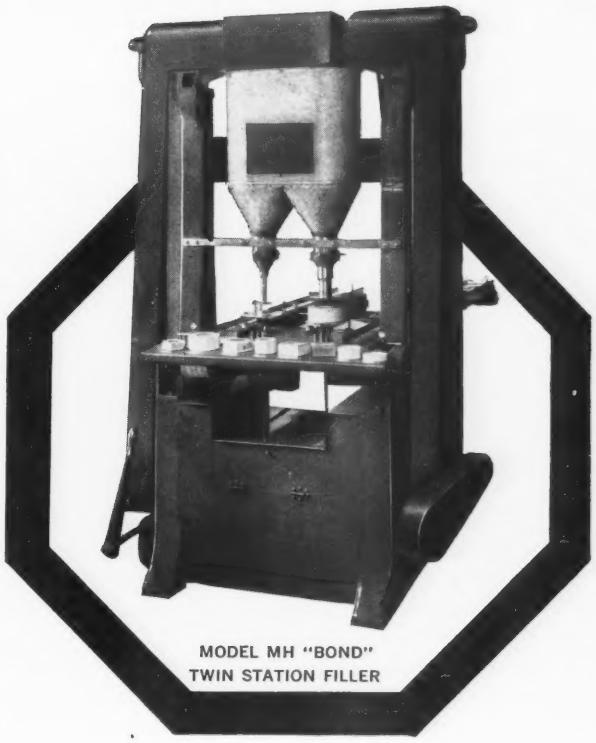
Studies on *Aspergillus usamii* mutation *Shirousamii* and its industrial application in alcoholic fermentation were reported on by Iizuka and Yamaguchi. They found that the amolytic and acid-producing powers of the mutants derived by ultraviolet radiation were approximately the same as the parent strain.

Maintenance of Strain. Maintenance of a desired strain capable of producing high yields of product is vitally important to plant production, and methods such as lyophilization, soil storage, and storage under oil, continue to be used. A new method of storage involving the spray-drying of fungus spores was reported by Mazur and Weston.

Spontaneous mutation in stored spores of *Streptomyces* species were studied by Wainwright.

Spontaneous mutation of *A. foenicis* (*A. niger* group), a citric acid producer, was reported by Emiliani and others.

Media. Little new information has been reported



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on changes in media or nutrition of microorganisms. Perlman and O'Brien reported on carbohydrates utilization by strains of *Streptomyces griseus*. Their observations show that care must be used in interpreting carbohydrate utilization tests as aids in differentiating species of *Streptomyces* and that these tests may be used to differentiate various strains of *S. griseus*.

Trace Materials. An important factor in many fermentation media is the presence of trace materials or metal ion sources which function as catalysts. Very little is known about the micro-element requirements of antibiotic-producing cultures.

A recent study of Heim and Lechevalier covered the effect of iron, zinc, manganese, and calcium on the growth of eight different strains of *Streptomyces*.

The role of copper as an oligo element in citric fermentation was studied by Bertrand and deWolf.

Ability of cadmium to replace zinc as an oligo element for *A. niger* was also investigated by Bertrand and deWolf. They found zinc to be indispensable as a trace element for *A. niger*, but cadmium can replace it for certain functions.

Nitrate and nitrite metabolism in microorganisms was reviewed by Verhoevn. Phosphorus utilization by *S. griseus* during fermentation was studied by Ganguly and Roy.

Fermentation Equipment. Several interesting articles on laboratory and pilot plant equipment for fermentation have appeared. Achorn reported on specially designed equipment for cultivating fastidious

Some Recent Antibiotics

Antibiotic	Produced by	Principally Active Against
Aklavin	*Streptomyces* (No. A 1129)	Bacteriophages
Alazopeptin	*Streptomyces griseoplanus n. sp.*	Tumors
Antiblastin	*Monilia antipiricullariae*	Yeasts, phytopathogens
Antibiotic substance 747	*Streptomyces vividis*	Gram-positive bacteria, actinomycetes
Antibiotic substance	*Rhizopus nigricans*	Gram-positive and negative bacteria
Antibiotic substance	*Streptomyces* sp.	Fungi and yeast
DON (6-diazo-5-oxo-L-narleucine)	*Streptomyces* sp.	Tumors
Flavicid	*Streptomyces* sp.	Bacteria and fungi
Formacidines (A, B, C, and D)	*Streptomyces ambofaciens*	Gram-positive bacteria
Miamycin	*Streptomyces* sp.	Gram-postive bacteria
Mitomycins A and B	*Streptomyces caespitosus*	Gram-positive and negative bacteria
Nucleocidin	*Streptomyces calvus n. sp.*	Bacteria and trypanosomes
Nybomycin	*Streptomyces* sp.	Bacteriophages
Oleandomycin*	*Streptomyces antibioticus*	Gram-positive bacteria
PA-132	*Streptomyces* sp.	Bacteria, fungi, protozoa
Phagomycin	*Streptomyces* No. E 424	Viruses
Phleomycin	*Streptomyces* No. 843-1	Mycobacterium
Primicine	*Streptomyces primycini n. sp.*	Gram-postive bacteria
Ristocetins A and B	*Nocardia lurida n. sp.*	Gram-postive bacteria
Streptovaricin	*Streptomyces spectabilis*	Mycobacterium
Thermoviridin	*Thermoactinomyces viridis n. sp.*	Gram-positive bacteria
Toyocamycin	*Streptomyces toyocaensis*	Candida
Xanthicin	*Streptomyces xanthochromogenus*	Fungi

*Previously called PA-105.

microorganisms. His experience shows the need for developing concepts, techniques, and equipment meeting more strigent requirements than those ordinarily encountered in the fermentation industry.

Home-type washing machines are being used at the Imperial Chemical Industries Ltd. and Welwyn Research Laboratories, as fermentors for antibiotic research. Eight of the machines are housed together side by side with other necessary apparatus.

A small, 30-gallon pilot plant fermentor easily operated by one man was described by Clarke. The fermentor is of stainless steel with a swing-top cover, externally removable bottom bearing, and electronic autifoam control. One man can open the fermentor, recharge, alter the number, position, and diameter of agitators, remove baffles, and make other changes. Closing the cover automatically engages a magnetic coupling. The bottom bearing is used primarily to support the agitator shaft in a vertical position when the tank is open. It also prevents whip during operation.

Fermentation process scale-up is one of the keys to successful process development. Gaden points out that the general practices of chemical process scale-up are applied to fermentations by isolating the basic factors. Each is then examined in terms of effect on scale-up, measurement and evaluation at various equipment levels, and variation and control at different levels. In the fermentation processes, reasonable scale-up procedures have been suggested for physically similar pilot plant and production equipment. On the other hand, scale-up directly from dissimilar laboratory units is practically impossible.

Fermentation Processes. The continuous fermentation process is still receiving attention, although industrially practical only for ethyl alcohol at the present time. An excellent review by Novick lists nearly all the work done on continuous cultivation of microorganisms to date. The continuous culture technique is a valuable research tool and also offers many advantages in the form of more economical production techniques to the industrial microbiologist. Another interesting paper by Herbert and others describes a theoretical and experimental study. Layout and operation of a small pilot plant for continuous culture of bacteria are described.

Aeration in industrial fermentations continues to be of prime importance. A recent paper by Amsz and Peppler describes a device for measuring dissolved oxygen in the processing vessel. Developed for controlling yeast fermentation, the unit is applicable to other vigorously aerated systems.

Other evaluations of aeration in fermentation have been made by Philips and Johnson and by Friedman and Lightfoot.

Various methods for aerating fermentation media have previously been reported. An excellent study on formation of gas bubbles at orifices immersed in liquids has been made by Leibson and associates.

Davidson and Amick reported on formation of gas bubbles at horizontal orifices.

Automatic pH control in fermentation is still being studied, because it frequently influences formation rate or ultimate yield of product. Numerous designs for pH control have been made, but few will satisfy the complete asepsis required for most pure culture systems. Deindoerfer and Wilker described a 30-liter fermentor for continuous pH control. Callow and Pirt also described equipment for automatic pH control, designed initially for a 2-liter scale, continuous vulture vessel.

Fuld and Dunn reported on a complete automatic pilot-plant control developing microorganisms.

Another serious problem in large-scale fermentation has been foam control. The Hodag Chemical Corp., Chicago, Ill., recently published a brochure on methods for applying antifoams. A description and sketch are given for drip-bucket, push, button, cup, cylinder, and sight feeders as well as automatic feeder and continuous-flow systems. Gaden and Kevorkian in an excellent report, describe what foams are, how they behave, how to eliminate troublesome foams, and how to put foams to work. An interesting automatic antifoam control for bench-scale fermentations, described by Bartholomew and Kozlow maintains efficient automatic control for a battery of 27 agitated bench-scale fermentors.

The normal procedure in fermentation is to use animal or vegetable oils that may not only reduce foam, but also act as nutrients and increase yields of product. Effect of oil on penicillin fermentation was reported on by Anderson and others. Yields of penicillin in pilot plant fermentations were increased from 1400 to over 2000 units per ml. by intermittently adding lard oil.

Another report by Noguchi and others also describes the pronounced effect of vegetable oils and fatty acids on penicillin yields. Linseed oil, was the most effective and yielded 4083 units per ml. of penicillin. Their lowest yields were with soybean oil, which is widely used in the United States. The effect of oils and fatty acids on the production of filipin was described by Brock. Antibiotic yields have been markedly increased by the presence of oils or specific fatty acids.

A novel method of antifoam addition, patented by Cash consists of introducing a defoamer agent substantially below the surface of the medium as an aerosol in a stream of sterile non-toxic gas.

Contamination in large-scale fermentation is usually held to a minimum by proper aseptic operating conditions. However, most plants occasionally encountered either bacterial or bacteriophage contamination regardless of operational conditions. Information on this point is usually scarce because companies do not publicize their particular problems. *Streptomyces griseus* bacteriophages are of industrial concern, and Alexander and McCoy have attempted to characterize them. Seven viruses were characterized into three serological groups: A, B, and C. Another fine report on bacteriophages is that of Boyd who extensively re-

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viewed their life cycle.

Disposal of Fermentation Wastes. Waste disposal continues to be of prime importance. An interesting method for synthetic-antibiotic wastes was reported by Adinoff. The wastes are sand-filtered and pumped into a brine strata at a depth of 1400 feet. A description of waste disposal at the Cherokee plant of Merck & Co., Inc., at Danville, Pa., was given by Dryden and others. The major products are antibiotics, synthetic vitamins, and cortisone. The activated sludge process is superior to other methods such as trickling filters, from the standpoint of ease and efficiency of operation.

Waste disposal problems encountered at the Rohm & Haas Co., Bristol, Pa., plant were reported by Steen and others. The wastes contain a mixture of aliphatic acids, alcohols and esters, plus some inorganic salts and small amounts of miscellaneous materials such as benzene and allied ring compounds, complex organic amines, and fermentor wastes. All wastes are successfully treated biologically by using two trickling filters operating in series.

THE BIOLOGY OF HAIR GROWTH

(Continued from page 445)

mechanism. In silk, the guiding influence in the formation of fibrils is the silkworm's extruding force. It can be shown by X-ray diffration that orientation occurs as the silk fibril is extruded. Electron microscope studies of hair indicate that the nature of the guiding force is different.

In an outstanding paper on *The Nature of Hair Pigments*, Thomas Fitzpatrick of the University of Oregon presented his latest tentative conclusions on the classification of hair and feather pigments. He separated the pigments into two main classes: eumelanin (black-brown) and pheomelanin (yellow-red). Both are formed in the melanocytes. The precursor for the black-brown pigment is tyrosine, and the enzyme involved is tyrosinase. This is also true of the yellow-red pigment, but, in addition, tryptophane metabolism may be involved. The black-brown pigment consists of oval or round, brown or black granules which exhibit general absorption of ultraviolet light. The yellow-red pigment occurs in round, aniline yellow granules which fluoresce at 3660 Angstroms. The brown-black pigment is probably insoluble in dilute alkali, whereas the yellow-red is probably soluble. The brown-black pigment is a large polymer coupled with a protein. He indicated that the yellow-red pigment system is probably under a different genetic control than the other. He outlined his scheme for the biosynthesis of melanin from tyrosine, and mentioned a new tyrosinase preparation which he expects to advance the knowledge of the tyrosine-tyrosinase system. He then discussed the important regulating factors in mammalian melanogenesis, and went on to show the results of recent radioautographic work on the formation of melanocytes during the cycle of hair growth. This work showed that melanocytes are not present during the quiescent stage nor can they be observed during the very early part of the active phase. In parallel studies of enzyme activity, it was found that at the same times that the melanocytes were absent, there was no tyrosinase or dopa oxidase activity. In commenting on Fitzpatrick's paper, Rothman rated it as a classic presentation.

The Behavior of Pigment Cells and Epithelial Cells in the Hair Follicle was presented by Herman B. Chase of Brown University. By transilluminating living follicles in the skin of mice he was able to observe cell and color formation. At the lower part of the bulb he found "loose" cells which could move around but still went on producing regular layers from any part of the bulb. Displaced pigment cells did not affect hair browth. Early melanocytes had long meteors and mature melanocytes moved to the dermal papilla where they were picked up by the growing keratin. Since melanocytes tended to be located in certain areas of the bulb throughout the cycle of hair growth they served as time indicators in the study of growth. During the transition phase of the growth cycle the lower bulb sheath lost cells for a while. As the bulb began to invert during the resting cycle, these cells formed a club. In normal transition phases, the group of cells stayed near the dermal papilla; when exposed to radiation the cells were stripped away and no club was formed. Without the club an entirely new bulb seemed to form for the next phase of the cycle.

M. S. C. Birbeck of Chester Beatty Research Institute, London, presented *The Electron Microscopy of the Melanocyte and the Spread of Pigment*, using beautiful electron micrographs. Studying hair plucked from the human scalp he identified the zone of melanocyte activity above the dermal papilla. The melanocytes attracted cortical cells passing by and mature pigment granules clustered on the outer walls of cells. There was no adhesion to cortical cells until the level of the dermal papilla. During the melanocyte process a membrane sealed the pigment granules from the rest of the cortical cell; later the membrane dissolved and the melanin was absorbed by the cells. The cuticle of the fiber is not pigmented because at the level at which this occurs, the cuticle is already so fully formed that it cannot accept the melanin granules. Birbeck noted that all melanocytes had a common type of structure. Birbeck's finding challenged earlier concepts of the melanocyte, Chairman Montagna commented.

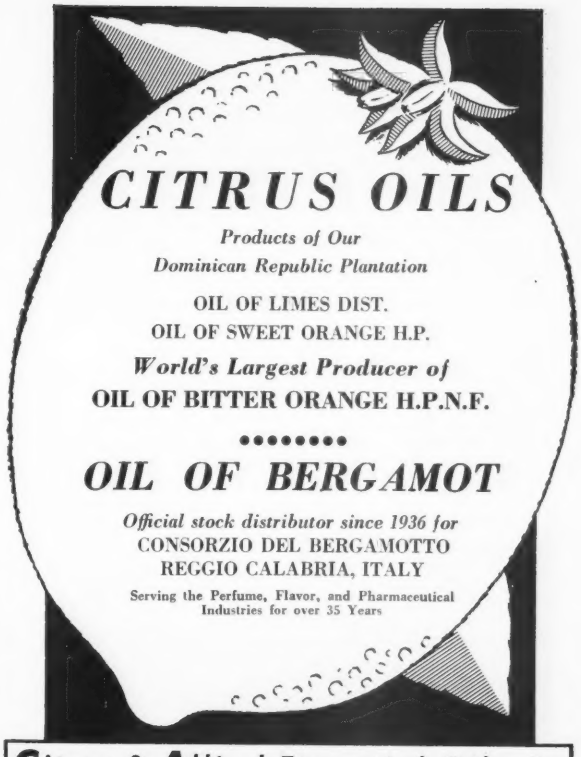
A. Durward of the University of Leeds, England, spoke on *Vascularity and Patterns of Growth of Hair Follicles*. In two years of thorough and elegant experimentation with rats and rabbits, Durward observed that vascular changes accompanied the rhythmic stages of hair growth in these animals, clearly indicating "an intimate correlation" between hair browth and the blood supply of the dermis and epidermis. In studying growth induced by plucking, normal and complete regrowth of hair followed complete plucking of the animals. When guard hairs were removed there

was no new growth of guard hairs, up to 60 days. When a triangular area of hairs was denuded, regrowth started near the base of the triangle, moving in waves of growth toward the apex. At the apex itself, where the previous population of hairs had been small there was no growth at all. This suggested to Durward that there may be a critical number below which regeneration is inhibited, a problem he intended to explore further.

William S. Bullough and Edna B. Laurence of the University of London studied *Mitotic Activity* in mice. Principal mitotic activity surrounded the dermal papilla. When the activity suddenly ceased at the catagen or transition phase of the growth cycle, the follicle shortened, keratinization moved down toward the base, and the hair fixed in position. The return to the surface in later phases of the cycle was an active process, contributing to a shedding of cells. The angle at which cells divided gave direction to the growing hair. Calculations on the number of mitoses in a given period were presented. They found that oxygen was essential, and they determined the optimum glucose requirements for mitotic activity, and found that fructose could be substituted, but not Krebs cycle substrates. In vivo studies showed that only glucose and oxygen were necessary to revive mitotic activity in the hair and skin of animals near death. Although shock inhibited mitosis, glucose again revived activity. Starvation had little effect, and heavy exercise had none upon mitotic activity. In general the matrix cells of the hair follicle were characterized by violent metabolic activity which demanded heavy reserves of all kinds of raw materials, particularly glucose. New waves of hair growth brought increases in the blood supply of glycogen to the inactive cell and a stretching of the capillary prepared the way for new growth. Hair cells were able to grow at the expense of other tissues when energy reserves were low.

The final day of the Symposium was devoted to a panel of papers on "Factors Which Influence the Growth of Hair." Herman B. Chase of Brown University discussed *Physical Factors*. He listed five possible ways of influencing hair growth and surveyed experimental verification of these possibilities: (1) Initiation of new growth in a resting follicle. Chemical irritants, plucking, and irradiation had accomplished this. (2) Delay or prevent the resting (telogen) phase. Although theoretically possible, this had not been accomplished experimentally. (3) Transforming a follicle so that it has a longer growth phase and a shorter resting phase. Hormonal effects seemed to be of this type. (4) Producing new follicles or multiples of existing follicles was conceivable, awaiting further knowledge. (5) Increasing the growth rate of a follicle now seemed impractical and experimentally impossible. Chase also reported studying radiation effects on animal hair. Although radiation initiated new hair growth in a resting follicle it also caused growing hair to fall out.

In a special report added to the program on the last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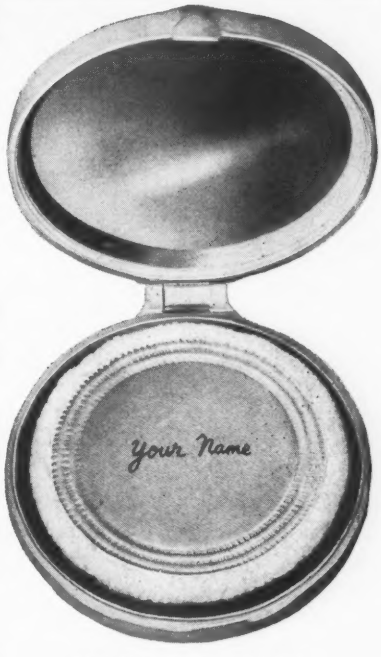

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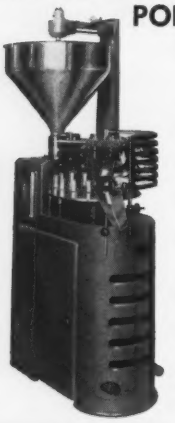

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minute, Van Scott described studies on *Effects of Ionizing Radiation and Effects of a Folic Acid Antagonist on Human Hair*. Patients who were receiving massive doses of ionizing radiation for the treatment of cancer were given controlled doses to small areas of the scalp. The result was an "all or none" morphological phenomenon. When abnormalities occurred, the bulb of the hair began to atrophy and about 10 days after treatment atrophy was complete. Dispersion of pigment was evident soon after treatment. In about 20 days epilation resulted. The severity of the effects was related directly to the amount of radiation. The effect occurred only on growing hairs, not during the quiescent stage. In the second part of his paper, Van Scott reported experiments on the effects of a folic acid antagonist. A dose that will affect bone marrow will also affect hair. After such a dose, hair grew but with a constriction that became more apparent during growth. By determining the distance from the constriction to the hair's base it was possible to determine how long ago the patient had received the dose, using 0.35 mm. as the average rate of growth.

Nutritional factors and hair growth in sheep were studied by M. L. Ryder of the Wool Industries Research Association, England. Although diet had an important influence on hair growth he noted that genetic links determined the upper amount of hair grown in sheep. Growth was influenced by protein intake, up to a point. Carbohydrate supplements were necessary to build both fleece and body weight, but there was no association between fat intake and hair growth. Believing the glycogen-glucose process to be of primary importance in the nutrition of the follicle, Ryder injected radioactive cystine into the bloodstream of sheep. Activity in the follicle was apparent within two minutes. The sulfur compound seemed to require only a few seconds to diffuse, entering the follicle from surrounding blood vessels and not from the papilla. It took one to two hours for activity to reach the prekeratinous area. The activity peak moved along the fiber toward the skin surface in a period of about 48 hours. There was a rapid turnover of cystine. Radioisotopes indicated cystine first entered one side of the wool follicle, then gradually spread across. This confirmed the asymmetric keratinization of wool fiber. Copper sulfate injected in sheep caused more crimping and coloring, suggesting that copper acts as a catalyst for oxidation. No copper was detected in the follicle, but as long as hair grew glycogen was present in the follicle. Once the follicle was mature poor diet did not inhibit growth.

James B. Hamilton of the State University of New York presented *Age, Sex, and Genetic Factors in Hair Growth in Man*. Continuing the studies he had reported at the 1955 conference on hair at the New York Academy of Sciences, Hamilton compared hair growth of Caucasians to hair growth of Mongolians. In a series of well-documented charts he showed that facial and axillary hair growth started earlier for Caucasians and

that growth was heavier for Caucasians. Noting that feeble-minded males showed lower endocrine activity and also considerably less beard growth than normal males, he suggested that facial and axillary hair might be useful as an endocrine assay. While the extent of beard growth seemed to be governed by genetic factors with androgen acting primarily as a trigger, hair growth patterns seemed to mark glandular aspects of the ageing process. A close study of these patterns might be useful for future research on genetics and gerontology, since beard and axillary growth was not affected by geographical, climatic, and dietary factors. Hair loss from ageing or castration following a pattern that was the reverse of the pattern during maturation. As a secondary sexual characteristic, hair growth did not assess all aspects of maleness, Hamilton pointed out. (Montagna and Rothman, in discussions with the London press, also emphasized that changes in hair growth were related to ageing, not to virility.)

Hormonal Factors were studied thoroughly by Melvin P. Mohn of the State University of New York. Using rats, Mohn observed every possible combination of hormonal activity. Diet and other environmental factors were carefully controlled and hair growth was checked in various stages of growth, including spontaneous growth, regrowth after clipping, and regrowth after plucking. Some of Mohn's conclusions were: (1) Cortisone and like hormones inhibited the initiation of hair growth, but did not affect the quantity of hair. (2) Estrogenic hormones tended to inhibit the whole cycle of growth, producing a fine "female" pelt. (3) Male hormones produced a coarse pelt, but had no effect on the growth cycle. (4) Thyroid and pancreas stimulated initial growth. (5) Prolactin probably inhibited. (6) Desoxycortical sterone and progesterone had no effect on hair growth. (7) Adrenalin caused local inhibition of growth. Mohn's contribution was praised by Chairman Montagna as "overwhelming." This report covered observations on the quantity and quality of the animals' hair. Mohn announced it will be followed by a later paper on histochemical observations.

Some data on *Treatment of Alopecia with Hormones* were submitted by Irwin I. Lubowe, New York dermatologist. He reported treating cases of total baldness and partial baldness with cortisone, ACTH, and corticosteroids. Hormone treatment stimulated hair growth from follicles that had been quiescent for as long as 25 years, according to Lubowe.

Data on *Hormonal Control of Sebaceous Glands* were submitted by Allen Lorincz of the University of Chicago. In experimental rats growth hormones failed to restore damaged sebaceous glands, he reported. Progesterone and testosterone caused enlargement of sebaceous glands.

Regeneration, Wound Healing, and "de novo" Formation aroused much controversy at the Symposium. Presented by R. E. Billingham of the University of London, it was based on his experiments with rabbits. Stripping away complete sections of intact skin it was

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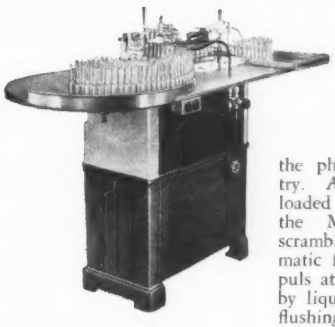

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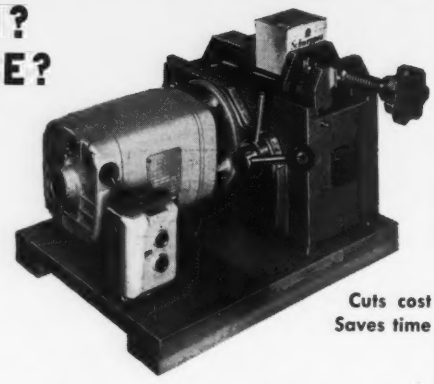

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possible to observe the entire healing process. Billingham reported that completely new follicles were formed in the wound areas. The hair from these "de novo" follicles was not pigmented, in contrast to the rest of the pelt. As an additional example of true neogenesis of skin and hair, he cited the deer and its growth each year of a new set of antlers covered with a layer of hair-bearing skin. In contradiction to Billingham's theory of "de novo" formation, another scientist at the Symposium, Dr. Szabo, presented mathematical calculations which indicated that no new follicles had to be formed during the lifetime of an individual. His own studies had suggested that newborn infants had a given number of hair follicles which did not increase during the individual's growth.

Assisting Chairman Montagna in the administration of the symposium were Secretary Geoffrey Bourne and Sir Francis Frazer of the British Society for Research on Ageing.

LIQUID LANOLIN

(Continued from page 451)

Hair Cosmetics:

Intensive advertising has done much towards stressing the value of lanolin as a hair conditioner, to the general public. Simple hair oils can be made up from liquid lanolin and refined mineral oil only, whilst liquid lanolin is easily incorporated into any hair cream formulation. It is also useful, in view of its cholesterol content, for hair tonics.

There has been some reluctance to incorporate normal lanolin into shampoo formulations in spite of its publicity value, since there is a tendency for foam volume to be decreased. However, it has been found that up to 10 per cent of liquid lanolin may be readily dispersed in the sulphated fatty alcohols forming the basis of most modern shampoos, and this helps to replace natural oils removed by these synthetic detergents.

Aerosol hair sets are products which have become immensely popular during the last few years and some typical formulations are given below:[2]

Aerosol hair set (P.V.P./Vinyl acetate type)	
PVP/V.A. 60-40 anhydrous ethyl alcohol	8.0
Liquid lanolin	0.2
Myristic alcohol	0.2
Isopropyl myristate	0.2
Perfume oil	0.7
Anhydrous ethyl alcohol	90.70
Filling charge:	
Hair set as above	30.0
Propellent Freon 11 & 12	70.0
Aerosol Hair Set (Shellac base type)	
Di-iso propyl thio urea	0.5
Perfume oil	0.5
Isopropyl myristate	0.7
Liquid lanolin	0.3
Shellac solution	48.0
(Orange dewaxed shellac 8.0)	
(Anhydrous ethyl alcohol 92.0)	
Propellant 11 & 12	50.0

Liquid lanolin may also be used for impregnation of the end papers used in cold perming.

Hand and Face Lotions

Lotions or creams for dry skins, may be compounded along the following lines:

1)	Liquid lanolin	8.0
	White Beeswax	10.0
	Spermaceti wax	7.5
	White oil	30.0
	Borax	0.5
	Water	44.0
2)	Liquid lanolin	5
	Lanolin	15
	Light mineral oil	41
	Stearic acid	4
	Glyceryl monostearate	2
	Glycerine	5
	Triethanolamine	1
	Water	90
	Methyl p-hydroxy benzoate	0.15
	Perfume	9.5

Sun-Tan Cosmetics

Since liquid lanolin is easily absorbed into the skin giving a super fatting effect, it is very useful as sun-tan oil. A simple formulation is[3] given below:

Liquid lanolin	5%
Isopropyl myristate	43%
Paraffin oil	50%
Sun protective agent	2%

Lipsticks

Liquid lanolin can be used to partly or wholly replace castor oil in lipsticks. It has a solubilizing effect on bromo acids, a suspending action on pigments, prevents 'sweating' of oil droplets and does not go rancid. There is some advantage over normal lanolin in that a lipstick containing a high proportion of liquid lanolin can be very smoothly applied.

Liquid lanolin is a non-hazardous material and, like ordinary lanolin has no tendency towards rancidity.

REFERENCES

1 Seifen. Ole-Fette-Wasche. **30**, 9-11, 1957.
2 American Perfumer & Aeromatics. **69**, 45-50, 1957.
3 American Perfumer & Aeromatics. **69**, 33-35, 1957.

SCC SEMINAR

(*Continued from page 449*)

the ultraviolet energy to free the enzyme tyrosinase." Pigmentation may in some instances be increased by the oral administration of copper and the melanocyte stimulating hormone of the pituitary will produce pigmentation.

Norman B. Kanof of New York discussed *Methods of Decreasing Melanin Pigmentation of the Skin* which include interference with enzymatic reactions which promote melanin formation, removal of excess pigment with chemicals, by physical therapy, by surgical techniques and by the use of sunscreens to prevent melanin formation. Interference with tyrosinase activity may take the form of combination with the enzyme or replacement of the copper which is essential to the activity of the enzyme. Although many compounds can reduce in vitro formation of melanin, mercurials, hydroquinone and its monobenzyl ether and para-hydroxypropiophenone have been used with some suc-

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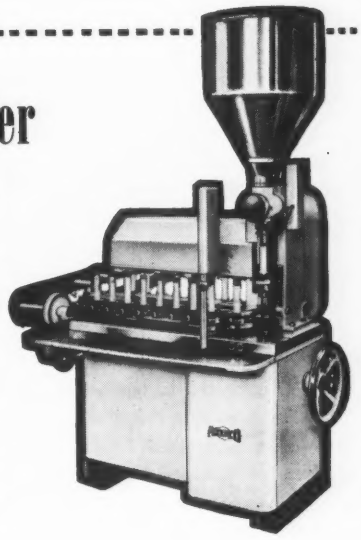

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cess clinically. Pigmentation can be removed by caustic peeling, by freezing the skin surface or by dermabrasion.

Dr. S. Rothman of the University of Chicago summarized and discussed the papers; lively discussion from the floor followed the papers and the summary.

The Thursday afternoon session, **Laboratory Methods for Product Testing** was an interim report by members of that committee of the Society. The committee chairman, Donald H. Powers of the Warner Lambert Pharmaceutical Company, presided and introduced the session. According to the chairman, cosmetic products are often sold without indication or measure of performance, often because no data and information on performance are available. The Textile Chemists and the American Society for Testing Materials are actively engaged in product evaluation. It is a challenge to cosmetic chemists to set up yardsticks and to find out the properties and qualities required for successful, acceptable cosmetics. For a hand lotion, for example, the following questions may be asked: What do you measure, what does it do, why is it preferred, what does the customer think she wants, what does she get, to what extent the lotion penetrates the skin, how does it change the skin. "It is suggested that until the chemists do have accurate methods for product performance that new cosmetics will continue to be promoted by strong advertising puffery because there is no other means of evaluating them." A major problem of the committee is to obtain active support and interest from more cosmetic chemists. When tentative methods can be proposed and reviewed for one year it is hoped that they can be adopted as Official S.C.C. Methods.

Ross Whitman of Rayette, Inc. discussed the work of his sub-committee on *Waving Lotions*. A method for determining the rate of wetting by cold wave solutions was devised and submitted to collaborators in the subcommittee and the results were amazingly varied in the different laboratories. Improvements in the method and attention to details at first overlooked led to better reproducibility. The report emphasized the difficulties that can be encountered in devising test methods for even apparently simple qualities.

The report on *Creams and Lotions* was prepared by Paul G. I. Lauffer of Northam Warren Corp. and read and amplified by G. Barnett of Coty. Here again progress has been relatively slow in the selected field —determination of viscosity and consistency. Special problems presented by liquid and cream emulsions make reproducible determinations difficult, so that the ultimate goal, prediction of changes in viscosity with time, is not yet in sight.

Hyman Henkin, of Colgate-Palmolive, reported for his sub-committee on *Shampoo Evaluation*. A suggested procedure for pH determination has been worked out. By using a salt bridge instead of the calomel electrode, reproducible values were obtained from different laboratories using different meters. The salt bridge consists of cotton twine saturated with potassium chloride solution and is discarded after each determination. The method is applicable to diluted and concentrated detergent and shampoo solutions. As regards the determination of consistency, preliminary survey indicates a complex problem which may require different methods for creams and pastes, for thin liquids and for thick liquids. Agreement should be first reached as to which of the properties that make up viscosity are the important ones. Eventually, performance tests should be set up to show interaction between the product and the surface to which applied.

W. G. Fredell of Warner Lambert presented and discussed tentative laboratory test methods for the evaluation of *Antiperspirant and Deodorant Effect* of preparations used in the human axilla. Other studies are being considered which can be made in vitro or on other skin surfaces and if they can be correlated with results from axillary areas, they will be submitted.

In the absence of Milton Schwartz of Revlon, Morris J. Root of G. Barr and Company presented his own work on the analysis of the spray characteristics of *Aerosol Products*. He described in detail and demonstrated four standard tests which can comprise a full evaluation of spray quality. These are pressure determination, delivery rate, spray pattern and spray angle.

Discussion following the presentation of each of these papers was vigorous and prolonged, indicating major interest in the subject of product evaluation.

The final session on Friday morning consisted of two papers on **Microscopic Methods.** Major Michael J. Davis of the Walter Reed Army Institute of Research showed many slides demonstrating *Capillary Microscopy of the Skin*. This is a method for the direct visualization in vivo of the circulation in the skin, made possible by the removal of the keratin layer. The normal anatomy of the circulation was described along with variations seen in different areas of the body. Alterations in the skin vessels were seen in changes brought about by edema, inflammatory changes and chronic congestion, and under the influence of various drugs. The effects following various skin diseases, in secondary atrophy and in ageing were shown and discussed.

Murray Berdick presented the paper by him and Everett G. McDonough on *Some Photomicrographic Techniques for Hair*. A series of photomicrographic methods specifically applicable to the study of human hair were described and illustrated. They included observations of cuticular scale patterns, "optical sectioning" to study internal details of fibers, cross-sectioning, observation of medullation, determination of diameters and cross-sectional areas, indexes of shapes of cross-section and fiber densities. Children's hair averages significantly smaller in cross-section than adult hair and the incidence of medullation increases with the cross-sectional area of the hair. "Problem" hair is more nearly circular in cross-section than normal hair of the same degree of medullation, while with the same shape, medullation is greater in normal hair.

(*Continued from page 477*)

to extend the research being done for the public benefit.[11]

Thus, there are many inventions made where a patent system, as generally considered, is not of great importance. But this is recited so that there will be no misunderstanding, for there are areas in which it is of great importance.

Another point should perhaps be considered before treating of the system itself. There are two sorts of inventors, those to whom invention is a side issue, an incident in their professional work, and those to whom invention is a central and sometimes exclusive interest. The latter are prone to overemphasize the contributions of the inventor to society, and to regard the patent system as a means, primarily, for extending a reward to those who invent.[12] Actually invention is only one part, and sometimes a relatively minor one, in the long process of rendering a new device or combination useful to the public. There has to be sound science to precede the act of invention to produce the knowledge on which it is based. And following invention there needs to be sound engineering, study of possible markets, development and design, and finally the expenditure of venture capital to provide the facilities for production and for advertising and selling.[13] The patent system was not set up primarily to produce rewards to inventors. It was set up to produce a public benefit by accelerating technical progress, and the reward of the inventor is only one aspect of its operation.[14]

We all know that, when conditions are right and technical advance has proceeded to a certain point, the same invention is likely to arise in a number of places nearly simultaneously.[15] Is there any sense, then, in issuing a patent to the man who may precede his fellows by only a few days? If inventions arise thus spontaneously why is there need for a system to stimulate invention? There are two answers to these questions. In the first place, again, the object in bringing a patent into existence is not solely to stimulate invention or even the research leading to invention. Without a patent system, a device could be invented time after time, and come into use only after a long interval, if it is of a nature such that its development and introduction is expensive. Secondly, not all inventions by any means occur simultaneously in a num-

[11]The patent policies of university and other nonprofit institutions are considered extensively in the two following reports: Nonprofit Research and Patent Management Organization (Publication 372), and University Patent Policies and Practices (Publication 257), by Palmer, Washington, D.C., National Academy of Science—National Research Council.

See also footnote 45, infra.

[12]Compare The Psychology of the Inventor, a Study of the Patentee, by Rossman, Washington, Inventors Publishing Co., 1931, ch. 3, Classes of Inventors, and ch. 4, The Characteristics of the Inventor.

[13]As Charles F. Kettering stated in 1938, "If the invention is going to be of any use, it has to be translated into a product and there is such an enormous step between the patent and the product. Mr. Knudsen [then president of General Motors Corp.] mentioned this morning the three steps, the idea step, the development step, and the production step. We call that second step the 'shirt-losing' zone, the development zone." TNEC hearings, pt. 2, December 5-16, 1938, p. 343.

See also Ney Product Development, by Higgins, Part III, Marketing New Products (Studies in Business Policy No. 69), New York, National Industrial Conference Board, 1954.

[14]*Kendall et al.* v. *Winsor*, 21 How. (U. S.) 322,327-328 (1858).

As William R. Ballard, adviser of the National Association of Manufacturers committee on patents, said: "The single purpose of the constitutional provision for patents is, of course, to promote the progress of the useful arts. Any benefits to patentees is wholly incidental." Patents, Progress, and Prosperity (Economic Series No. 62), New York, National Association of Manufacturers, 1953, p. 9.

[15]See The Psychology of the Inventor, a Study of the Patentee, by Rossman, Washington, Inventors Publishing Co., 1931, ch. 8, Multiple Invention, pp. 131-142; and particularly the table on p. 142 (A List of Some Inventions and Discoveries Made Independently by Two or More Persons, taken from the article Are Inventions Inevitable? by Ogburn and Thomas, Political Science Quarterly, vol. 37, March 1922, pp. 93-98).

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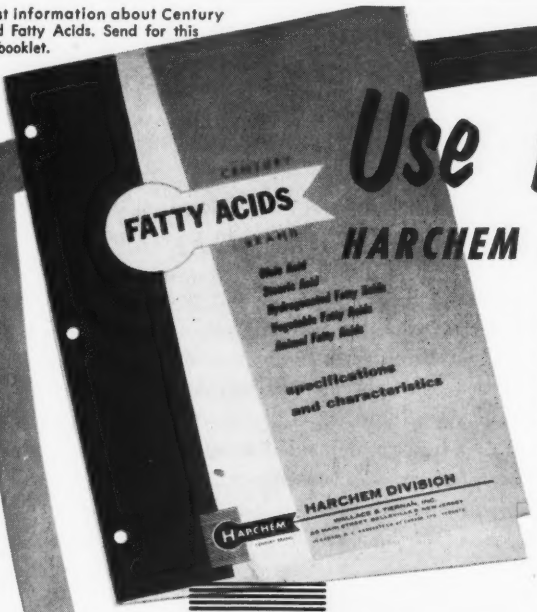

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ber of places. On the contrary there have often been instances when inventions, which later appeared almost obvious, have not been made for years, while industry plodded along well-worn paths until some unconventional individual, who refused to travel in a groove, found the neat solution which had long been overlooked.[16]

In considering the first objective of the system, therefore, we need to do so with a number of qualifications. There is no need for rewards of this sort to stimulate fundamental research, and outstanding scientists generally scorn any such motivation in what they do. Yet their accomplishment is exceedingly important for our future welfare, even in a material way. Pure science needs encouragement, but not of this sort, and, in this country, with our intense interest in the immediate and the applied, we are only too prone to fail to support adequately the fundamental work which must precede all really important technical advance. The reward is important in encouraging individual inventors, yes, but its importance in this regard is often overestimated. But there is another aspect for which the reward feature assumes its true importance. Invention, today, is seldom a matter of a flash of inspiration.[17] If is far more often the result of arduous work, by a group of individuals, who push the extent of knowledge in a particular field beyond that of their contemporaries, and thus finally grasp ways in which their new concepts can produce new materials, or combinations, or devices, which will meet public needs and desires. This is the way in which most of our practical progress occurs. It is very hard to justify research of this sort on practical matters, expensive as it is, and without any guaranty of useful results, if the products which ensue are immediately to become public property, to be copied at will by competitors.[18] It is in this area. of the justification of extensive research programs, that the reward aspect acquires great importance.

The second objective is allied with the first. Even if research produces a new and useful result, there is a long path, and usually much expense, before it can become widely used.[19] Lone inventors seldom understand this fully. The old story about the inventor of a mousetrap who had a path promptly worn to his door is sheer myth. And it is to be feared that many men, who have not directly experienced the grief and delay which is inevitably associated with introducing a new thing to an apathetic public, fail to realize the length and difficulty of the trail.

I can probably best illustrate this by an example. Some 30 years ago, I was associated with an inventor, John A. Spencer, who was one of the most ingenious individuals I ever knew. He made an invention in the field of thermostats. What he did was merely to shape a piece of thermostatic metal into a dished shape, like the bottom of an oil can. When heated it would suddenly snap, and it was thus very effective in opening and closing electric circuits. This certainly was a flash of genius. After it was done it looked obvious, as though anyone might have thought of it. But there had been hundreds of different forms of thermostats built, and no one had. As soon as it appeared it was fully evident that there was a real use for it; for example, in flatirons, to control their temperature. Did it promptly find acceptance? Not at all. A company was formed and it was nearly 10 years before there was wide use. A recital of the vicissitudes of that company would fill a volume. It nearly folded up at times. It had the usual difficulty, and expense, of convincing large concerns in the field that its patents were valid and needed to be respected. The process of manufacturing these snapping disks so that they would be uniform and reliable took a lot of time and sweat. Yet the device did come into use, and today the patents are expired and it is widely used for all sorts of purposes. The inventor finally found his stock in the company to be valuable. Those who risked their funds made a profit. The company still exists and has given employment to many. Yet none of this could have occurred had the patent system not been in existence. There might, eventually, have been a new sort of thermostat, but there would not have been a new, independent industrial organization to introduce it vigorously and promptly. Nor could it occur if the system becomes weak and the true value of patents highly questionable. The illustrations could be multiplied in which the system performs its proper function in justifying the risking of venture capital in programs which are bound to be hazardous.

The third objective, to discourage the use of secrecy in industry, is more subtle. Those of us who have had our industrial experience under modern American conditions can probably hardly realize the situation which must have obtained in early industry.[20] Every manufacturing concern depended upon the development of secret processes for carrying out its work. Admission of even customers into a plant was unthinkable. The process of hiring away individuals, and more reprehensible methods, must have been rampant. We have come a long distance from this provincial point of view. There are, of course, too many closed doors, even today. When secrecy becomes internal, especially within a research laboratory, with each investigator

[16] *Miehle Printing Press & Mfg. Co. v. Whitlock Printing Press & Mfg. Co.*, 223 Fed. 647 (2d Cir., 1915).

[17] Cf. *Cuno Engineering Corp.* v. *Automatic Devices Corp.*, 314 U. S. 84 (1941).

[18] See footnote 13, supra; also statement of William H. Davis in U. S. Congress, Senate, Special Committee on Atomic Energy, Atomic Energy Act of 1946, hearings on S. 1717, pt. 1 January 22-23, 1946, pp. 60-63.

[19] See especially, New Product Introduction for Small Business Owners, by Hilton, (Small Business Management Series No. 17), Washington, D. C., Small Business Administration, 1955, Also, New Product Development: I Selection Coordination, Financing; II, Research and Engineering; III, Marketing New Products, by Higgins (Studies in Business Policy Nos. 40, 57, 69), New York, National Industrial Conference Board, 1950, 1952, 1954.

Note further, concurring opinion of Frank J., in *Picard* v. *United Aircraft Corp.*, 128 F. 2d 632 (2d Cir. 1942).

[20] See, for example, Guilds in the Middle Ages, by Renard, London, G. Bell, 1919, p. 35.

concealing his thoughts and results, it is a disease. But the whole trend has been in the other direction.

American industry has its secrets today: on matters that are not patentable, on know-how and the like.[21] Inventions, too, are held secret until the patents on them issue or are at least far advanced and, in spite of improvement in this regard in recent years, the period during which a patent application is being prosecuted is still too long.[22] But the whole inclination in this country is in the other direction, and there is no doubt that the presence of the patent system, rendering secrecy unnecessary whenever it applied, has had much to do with a healthy trend.

It is unfortunate that, in recent years we have again had heavy emphasis on secrecy, in connection with military matters and especially in connection with atomic energy. Some of this has been necessary. Some, unfortunately, has been absurd, and we seem to have had an obsession on the subject from which we are slowly recovering. Yet there has been vigorous protest, especially from scientists, on extreme procedures concerning secrecy, and there is no doubt that most of us regard it as a necessary evil which we wish we could dispense with safely.[23]. Our inclination is to be frank, and to conceal little. The extreme period of overemphasis on secrecy is, it is to be hoped, a passing phase. And there is no doubt, when one views the progress of industry from a secretive devious affair to a comparatively open procedure with much collaboration and interchange, that the third objective of the patent system has been of genuine importance.

Thus the patent system has been exceedingly valuable to our country in the past. It has been an important foundation of our industrial success in time of peace and is one of the factors responsible for the building up of the reserve of research organizations which served us well in the past war. We are now in a period of extraordinary prosperity. Some of this, without doubt, is due to the enormous impetus given to research by the war. The rapid and startling advent of radar, proximity fuses, atomic bombs, and many other devices, demonstrated beyond question that research and development, aimed at applying scientific results, may be made to accomplish remarkable things. No one could well miss this lesson, although many fail to realize that the extent of success depended upon the fact that there was a great backlog of scientific ac-

[21]This is vividly illustrated in Business Espionage, by Smith, Fortune, vol. 53, May 1956, pp. 118-121, 190, 192, 194.

[22]On backlogs and related aspects of Patent Office procedure, see testimony of Robert C. Watson, Commissioner of Patents, U. S. Patent Office, before the Subcommittee on Patents, Trademarks, and Copyrights, of the Senate Committee on the Judiciary, American Patent System, hearings, pursuant to S. Res. 92, October 10-12, 1955, pp. 161-166, 195-198.

[23]See testimony presented on March 7-9, 1956, before the Subcommittee on Government Information of the House Committee on Government Operations, John E. Moss, chairman, on the availability of scientific and technical information. These hearings have not been published to date (June 1, 1956), but excerpts have been printed in the Bulletin of Atomic Scientists, May 1956, pp. 169-176, and the Washington Post, March 21, 1956 (p. 14), and March 28, 1956 (p. 26).

[24]This was stressed repeatedly in the author's Science, the Endless Frontier, a report to the President on a program for postwar scientific research, Washington, U. S. Government Printing Office, 1945.

[25]The rapid rise of trade associations and industrial research laboratories in the past few decades has greatly facilitated this interchange of information.

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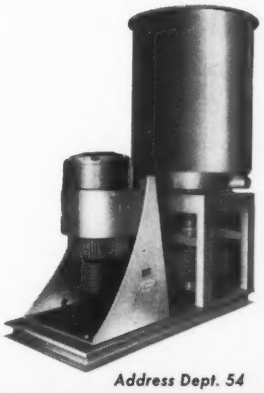

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complishment which could be suddenly drawn upon, and hence fail to realize the necessity of keeping this basic science reserve continuously replenished.[24] Since the war the great increase in research, in universities, industry, and Government, has been one of the factors, and a very important one, causing a sharp rise in our industrial productivity and an increase in our standard of living. Some of this research is held secret, in connection with military matters. But the great bulk of it is published and interchanged freely, even when it is conducted in industrial laboratories. The pace is so fast that, if one group does not publish promptly, another group is likely to do so on the same accomplishment. There is no doubt that the patent system facilitates this process, for it allows publication to be made broadly as soon as the patentable ideas which appear are covered by application.[25]

The patent system is thus potentially beneficial in at least three ways, and its influence has been on the whole salutary throughout our industrial history.

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2,797,234-5—Hoffmann-La Roche — Tertiary Carbinyl Esters and Their Preparation.

2,797,236—Hoffmann-La Roche — Lower Alkanoate Esters of 3-Methyl-6-Cyclohexylidene-1-Hexen-3-Ol and the Corresponding 1-Hexyn Analog.

2,797,237—Hoffmann-La Roche—Lower Alkanoic Acid Esters of 3,7,9-Tri-Methyl-6-Decen-1-Yn-3-Ol.

2,797,241—C. L. M. Brown et al. (England)—Diethyl-Glycinexylidide and Process.

2,797,242—Parke, Davis — Substituted A-Benzylphenethylamines and Methods for Producing the Same.

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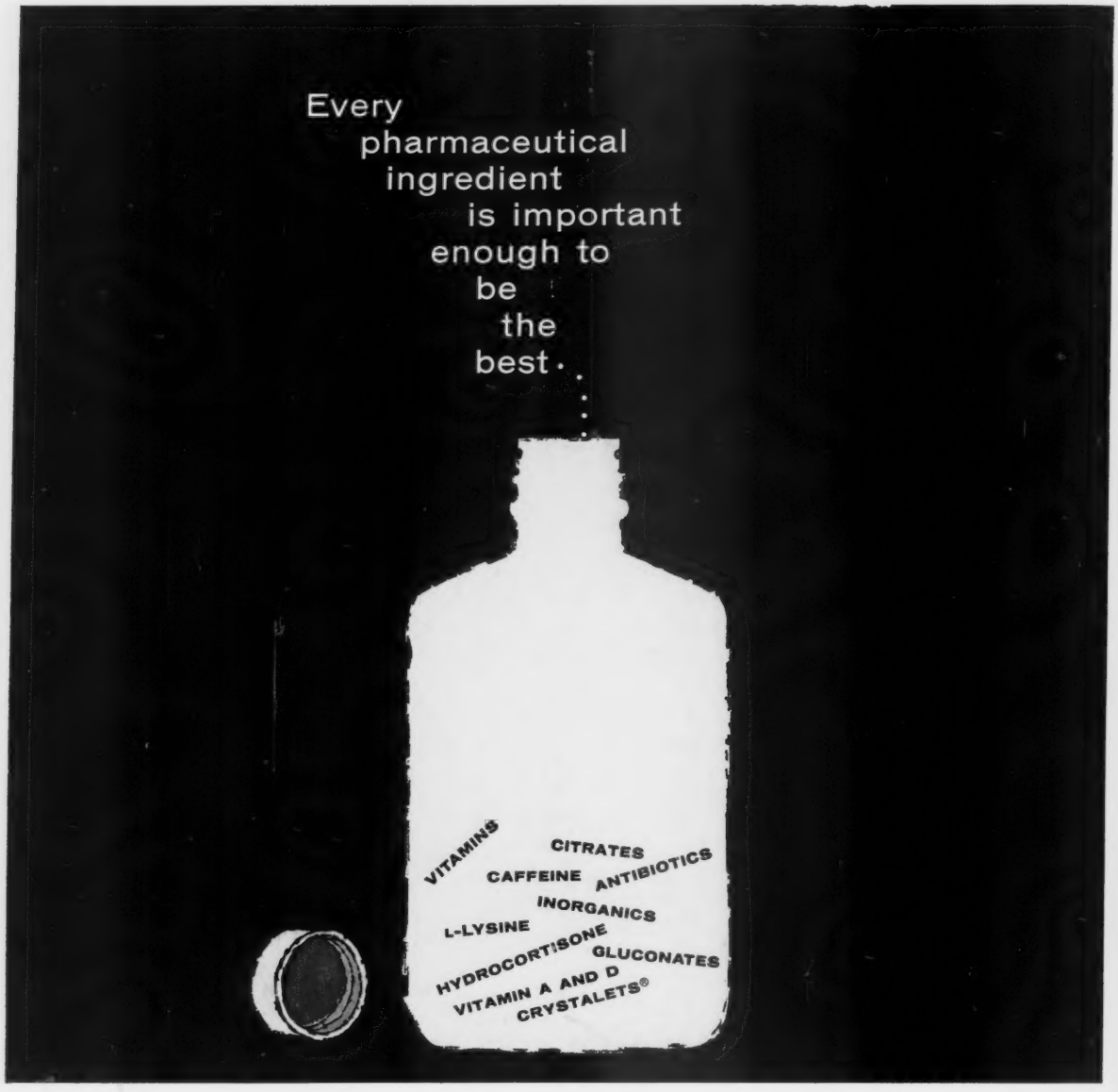

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